Innovations in International Affairs

CHANGING PATTERNS OF WARFARE BETWEEN INDIA AND PAKISTAN

NAVIGATING THE IMPACT OF NEW AND DISRUPTIVE TECHNOLOGIES

Rizwana Abbasi and Muhammad Saeed Uzzaman

ROUTLEDGE

Changing Patterns of Warfare between India and Pakistan

Changing Patterns of Warfare between India and Pakistan analyzes how advanced nuclear technologies and the advent of disruptive technologies have affected the evolving conflict between India and Pakistan.

Advanced nuclear technologies such as nuclear submarines, aircraft carriers, ballistic missile defence systems (BMDs), multiple independently targetable re-entry vehicles (MIRVs), anti-satellite weapons (ASAT); and disruptive technologies such as hypersonic weapons, artificial intelligence (AI), lethal autonomous weapons (LAWs), unmanned aerial vehicles (UAVs) / drones (AI), space-based and cyber technologies have all complicated crisis dynamics and the domain of warfare in the region. Further, the employment of India's compellence strategy is an indication of a change in its stance that demonstrates smart/surgical strikes are now more likely. The phenomenon of surgical strikes raises the question of how disruptive technologies will be used to gain direct/indirect military control and hence challenge the existing status quo and deterrence stability. Against this backdrop, the authors predict how this conflict may develop in the future and evaluate the ways to stabilize deterrence and regulate the militarization of artificial intelligence and disruptive technologies between India and Pakistan.

This book will be of interest to all those researching and working in the fields of security studies, strategic studies, nuclear policy, deterrence thinking and proliferation/non-proliferation aspects of the nuclear weapons programme within South Asia and beyond. It will also be relevant for the academic community, policy-makers, diplomats, members of international non-governmental organizations (INGOs), professional research institutes and organizations working on India–Pakistan relations.

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Abbreviations

4IR	Fourth Industrial Revolution
AAD	Advanced Air Defence
ADMS	Air Defence Missile System
AEW&C	Airborne Early Warning and Control
AI	Artificial Intelligence
ALIT	Aerospace Long-March International Trade Co Ltd
A-SADS	Autonomous Surveillances and Armed Drone Swarms
ASAT	Anti-Satellite Weapons
ASEAN	Association of Southeast Asian Nations
ASW	Anti-Submarine Warfare
AWACS	Airborne Warning and Control Systems
AWS	Autonomous Weapons Systems
BECA	Basic Exchange and Cooperation Agreement
BMD	Ballistic Missiles Defence
BRI	Belt and Road Initiative
C2	Command and Control
C4I	Command, Control, Communications, Computers and Intelligence
C4I2	Command, Control, Communications, Computers, Intelligence and Information
C4I2SR	Command, Control, Communications, Computers, Intelligence, Information, Surveillance and Reconnaissance
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance
CAIR	Centre for AI and Robotics
CBMs	Confidence Building Measures
CCS	Cabinet Committee on Security
CD	Conference on Disarmament
CERTs	Computer Emergency Response Teams
CH-4	Cai Hong 4
CIRUS	Canadian-Indian Reactor, U.S.
CJCSC	Chairman Joint Chief of Staff Committee
CMD	Credible Minimum Deterrence

COAS	Chief of Army Staff
COMCASA	Communications Compatibility and Security Agreement
CPEC	China Pakistan Economic Corridor
CSD	Cold Start Doctrine
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CW	Cyber Warfare
DAIC	Defence AI Council
DCC	Development Control Committee
DGMO	Director General Military Operations
DRDO	Defense Research Development Program
DTTI	Defence Technology and Trade Initiative
ECC	Employment Control Committee
EU	European Union
EW	Electronic Warfare
FMCT	Fissile Material Cut-off Treaty
FSD	Full Spectrum Deterrence
FU	First Use
GIDS	Global Industrial and Defence Solutions
HCM	Hypersonic Cruise Missiles
HGV	Hypersonic Glide Vehicle
HSTDV	Hypersonic Technology Demonstrator Vehicle
HW	Hybrid Warfare
IAEA	International Atomic Energy Agency
IAF	Indian Air Force
IBGs	Integrated Battle Groups
ICBM	Intercontinental Ballistic Missile
ICJ	International Court of Justice
IND	Indian Nuclear Doctrine
INGO	International Non-Government Organization
IOR	Indian Ocean Region
ISPR	Inter-Services Public Relations
ISR	Intelligence, Surveillance and Reconnaissance
ISRO	Indian Space Research Organization
IT	Information Technology
IW	Information Warfare Domain
JATM	Joint Anti-Terrorism Mechanism
JDIAF	Joint Doctrine of Indian Armed Forces
JeM	Jaish-e-Mohammad
JIT	Joint Investigation Team
JuD	Jamaat-ud-Dawa
km	Kilometres
LAC	Line of Actual Control
LAWS	Lethal Autonomous Weapon System
LEMOA	Logistics Exchange Memorandum of Agreement
LeT	Lashkar-e-Taiba

LIC	Low-Intensity Conflict
LoC	Line of Control
LOW	Launch on warning
LUA	Launch under attack
LWD	Land Warfare Doctrine
MIRVs	Multiple Independently Targetable Reentry Vehicles
MoD	Ministry of Defence
MR	Massive Retaliation
MTCR	Missile Technology Control Regime
NASA	National Aeronautics and Space Administration
NSAB	National Security Advisor Board
NAVCENT	United States Naval Forces Central Command
NC2	Nuclear Command and Control
NCA	Nuclear Command Authority
NCBM	Nuclear Confidence Building Measures
NESCOM	National Engineering and Scientific Commission
NEW	Net-centric Electronic Warfare
New START	New Strategic Arms Reduction Treaty
NFU	No First Use
NPT	Nuclear Non-proliferation Treaty
NRR	Nuclear Restraint Regime
NRRC	Nuclear Risk Reduction Centre
NSAB	National Security Advisory Board
NSG	Nuclear Suppliers Group
NTI	Nuclear Threat Initiative
PAC	Pakistan Aeronautical Complex
PAD	Prithvi Air Defence
PAF	Pakistan Air Force
PDV	Prithvi Delivery Vehicle
PGMs	Precision-Guided Munitions
PRSS	Pakistan Remote Sensing Satellite
QPQP	Quid Pro Quo Plus
RAW	Research and Analysis Wing
RISAT	Radar Imaging Satellite
ROV	Remotely Operated Vehicles
SAARC	South Asian Association for Regional Cooperation
SAM	Surface to Air Missile
SAR	Synthetic Aperture Radar
SATUMA	Surveillance & Target Unmanned Aircrafts
SCO	Shanghai Cooperation Organization
SFC	Strategic Forces Command
SIPRI	Stockholm International Peace Research Institute
SLBM	Submarine-Launched Ballistic Missiles
SLCM	Submarine-Launched Cruise Missile
SPD	Strategic Planning Division

SRR	Strategic Restraint Regime
SSBNs	Nuclear-Powered Ballistic Missile Submarines
STA	Strategic Trade Authorization
SUPARCO	Space & Upper Atmosphere Research Commission
TES	Technology Experiment Satellite
TNWs	Tactical Nuclear Weapons
UAV	Unmanned Aerial Vehicle
UCAV	Unmanned Combat Aerial Vehicle
UN	United Nations
UNCIP	United Nations Commission for India and Pakistan
UNMOGIP	United Nations Military Observer Group in India and Pakistan
UNSC	United Nations Security Council
U.S.	United States
WMD	Weapons of Mass Destruction

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Introduction

India and Pakistan have been engaged in bilateral conflict since independence from British Raj. The relationship between both neighbouring states is full of misunderstandings, apprehensions, mistrust and antagonism. Bilateral rivalry,[1] in the present times, in the backdrop of a growing power imbalance accentuated by the induction of new destabilizing technologies, evolving military doctrines, alleged cross-border terrorism and recurring sub-conventional crises, especially Pulwama/Balakot air strikes and India's scrapping of its constitutional law (articles 370 and 35A) that grants special status to the Indian-administered Kashmir[2] has deepened.

Nearly four decades ago, Kenneth Waltz, a leading nuclear optimist, advocated that the spread of nuclear weapons would guarantee peace and resolve complex security problems between countries.[3] Deterrence theory[4] advocates how the threat of the use of force by one party can convince another party to refrain from initiating some other course of action. Thus, stable deterrence leads to less likelihood of war and secures peace. The first[5] and second nuclear ages[6] were defined by nuclear arsenals as a source of security. Nuclear deterrence[7] remained a contested scholarly debate between nuclear optimists[8] and pessimists[9] with different conclusions drawn by either side. The Cold War nuclear lexicon remained a useful guide to understanding the deterrence stability between the two largest nuclear-armed adversaries; however, it has several inherent limitations and may not necessarily have a universal application due to the dissimilar nature and scope of military competition at the regional level.

Twenty years into the overt nuclearization of South Asia, India and Pakistan continue to perceive threats from each other. Sustained and deep-rooted complexities between the two states have driven them into an intense action-reaction-guided arms racing problem.[10] With India's ambitions to become a global power and Pakistan's continued quest for its security, nuclear deterrence remained unstable and peace fragile in South Asia. Arguably, the power equilibrium between the smaller nuclear possessor states, such as India and Pakistan, is not sufficiently adequate to discourage them from imposing their will or interfering in each other's national interests. More so, they are embroiled in historic animosity with no appetite to hold sustainable dialogue/negotiations to stabilize deterrence and minimize the likelihood of war.

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Conflict dynamics: nuclear technologies and strategic postures

Crises have remained a recurring pattern in India-Pakistan conflict dynamics even after the advent of nuclear weapons. Nearly five crises have erupted after the overt nuclearization of South Asia, i.e., the 1999 Kargil War, the 2001–2002 Twin Peaks crisis, the 2008 Mumbai attacks, the 2016 Uri attacks and the 2019 Pulwama/Balakot Strikes; however, no single crisis escalated to a major war. In the wake of the Kargil crisis, the stability-instability paradox[11] gained traction among scholars examining the strategic dynamics of South Asia. This means that the probability of a direct war between the two nuclear possessor states greatly decreased, whereas the space for minor or indirect conflicts between them increased. The two states conceptualized that war can be fought and even won under the nuclear overhang to resolve bilateral crises.

The two states adopted diverse military strategies from time to time, but the eruption of crises remained a recurring pattern of engagement. For example, India initially committed to a credible minimum deterrence (CMD) and no-first-use (NFU) policy along with a force posture of massive retaliation (MR) to a nuclear attack since 2003. Pakistan, in parallel, announced a policy of CMD and nuclear first-use (FU) to balance conventional asymmetry with India. In this context, in 2004, India in line with its objective to wage a limited war or conduct small military operations against Pakistan developed a range of technologies and introduced war-fighting doctrines and strategies. For example, India is understood to be following the offensive cold start doctrine (CSD) envisaging the conduct of limited but intense offensive operations against Pakistan employing integrated battle groups (IBGs). The doctrine is intended to mobilize India's conventional forces to perform holding attacks below the perceived nuclear threshold of Pakistan. Correspondingly, Pakistan, which initially defined its doctrinal policy of CMD and FU to address strategic imbalance with India, responded with the induction of low-yield weapons and also developed doctrines such as full-spectrum deterrence (FSD) and quid pro quo plus (QPQP) to cover the full spectrum of threat[12] in all three categories, i.e., strategic, operational and tactical. These developments neither could avert the recurrence of sub-conventional crises nor stabilize deterrence.

In parallel, both the states' nuclear force was notably changing from the time their nuclear doctrines were announced. For example, today, India is fielding a ballistic missile submarines (SSBN) fleet, testing the intercontinental ballistic missiles (ICBMs), building multiple independently targetable reentry vehicles (MIRVs) and ballistic missile defence systems (BMDs), developing cruise and hypersonic missiles and has commissioned an aircraft carrier. Pakistan correspondingly has also developed nuclear-armed ballistic and cruise missiles, short-range Nasr – a solid-fuelled tactical ballistic missile and MIRVs. Induction of these systems in states' inventories could not prevent sub-conventional crises and instead led to further building these states' reliance on offensive/war-fighting doctrines.

For example, in parallel to nuclear force modernization, India, in addition, has developed its joint doctrine of Indian armed forces (JDIAF-2017) to fight wars on a full spectrum of military conflict with a focus on punitive disruption and destruction. This doctrine explicitly considers 'surgical strikes as a formal part of India's retaliatory toolkit against terror provocations.'[13] This doctrine not only acknowledges the existence of CSD but also stimulates the conduct of surgical strikes against Pakistan. The Indian additional land warfare doctrine (LWD-2018) mentions the conduct of military operations with depth, effect, sophistication and precision through the inclusion of disruptive technologies.[14] Thus, the common intended objective of evolving doctrines is the conduct of smart military operations against Pakistan. The LWD-2018 further focuses on force modernization[15] by reinforcing its existing operational capabilities to increase punitive response options through the inclusion of new technologies to counter/initiate cross-domain warfare such as Hybrid Warfare (HW), Cyber Warfare (CW), Information Warfare Domain (IW) and Electronic Warfare (EW) capabilities. Against the above backdrop, this study evaluates how the operationalization of India's conventional, offensive doctrines impact the conflict dynamics and pattern of warfare between India and Pakistan?

Amidst the technological revolution, India embraces compellence[16] strategy and counter–force/disarming first-strike posture against Pakistan, whereas to deter India's surgical strike stratagem based on compellence strategy, Pakistan declared that any such Indian military endeavour will be dealt by the QPQP policy response.[17] The new technologies highlighted above enable actions below the perceived threshold of the adversary. However, they also provide new pathways for escalation from the sub-conventional to the strategic level. Notably, the compellence strategy contradicts the policy of minimum deterrence.[18] Keeping in view the recent patterns of crises between the two nuclear rivals, it is observed that India's growing nuclear efficiency and sufficiency[19] puts India on an advantageous pedestal that triggers a new debate in India on the modification of Indian nuclear doctrine (IND). For example, the policy of NFU remained the backbone of India's nuclear doctrine from the outset.[20] However, India's high-profile elites[21] have conceptualized the Indian pre-emptive counterforce strike options against Pakistan. Owing to India's recent technological innovations and transformation in conventional doctrines, Indian leadership to build compatibility between conventional and strategic doctrines is conceptualizing to change its policy of NFU to FU. Further, owing to military modernization, India is suspected to be transforming its strategy from counter-value to counterforce/disarming first strikes. This study thus attempts to understand the rationale behind the possible shift in India's nuclear posture, assessing how successfully India can launch a counterforce, disarming first strikes in a crisis. How would this doctrinal shift impact regional conflict dynamics and patterns of warfare between India and Pakistan?

Disruptive technologies and nuclear deterrence

The advent of non-nuclear/disruptive technologies or AI-led LAWS will gradually alter patterns of warfare while impacting strategic stability. At present, the world is experiencing a fourth industrial revolution (4IR) and the third nuclear age[22] in which a wave of new and disruptive technologies is being developed. New technologies always have transformative effects on warfare and military thinking.[23] States' induction of disruptive technologies carries the potential to alter the conflict dynamics and character of warfare,[24] where all-out conventional wars might be replaced by smart wars that may become technologically permissible and strategically advantageous. In the third nuclear age,[25] disruptive technologies, on the one hand, will expand the menu of options available to states as a less risky alternative to nuclear weapons while, on the other, these technologies will make nuclear arsenals more vulnerable to targeting.

Notably, advances in disruptive technologies have made nuclear forces more vulnerable by providing confidence to the first mover, thereby increasing the risk of a first-disarming strike in a crisis. Simultaneously, leaders fearing disarming first strikes may choose to launch nuclear weapons first before losing them. Disruptive technologies have effects on nuclear second strike capability including Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR) and force postures. More so, disruptive technologies will contribute to accidental or inadvertent nuclear escalation by threatening dual-use command and control (C2) assets in space and cyberspace or by squeezing time for decision-makers as they may choose nuclear use option under the false belief that an enemy's nuclear strike is imminent.

In this context, certain technologies that have undermined doctrinal strategies and deterrence stability include disruptive technologies such as hypersonic weapons, artificial intelligence, AI enabled LAWS, drones/unmanned aerial vehicles (UAVs), space-based technologies and cyber technologies. AI and machine learning, which includes – but is not limited to – LAWS is likely to change the existing ways and means of war by introducing a significant level of autonomy in warfare. India, in recent years, has been actively involved in developing AI for military purposes together with its changing strategic postures that, in turn, may ultimately impact the strategic stability of South Asia. Machine learning could be used to make nuclear delivery systems capable of navigating to their target more autonomously and precisely, with less reliance on humans setting navigation and guidance parameters. This has created an emerging grey area and an increasing blur line between conventional and nuclear systems, a likelihood of less time for decision-making and a more complex information environment and new pathways to escalation, miscalculation and entanglement, all of which could increase risks of crisis stability. This study thus evaluates how the advent of disruptive technologies seems to have undermined the doctrinal strategies and deterrence stability, thereby eroding the foundation of nuclear deterrence.

To sum up, the induction of advanced nuclear and non-nuclear/disruptive technologies entails a transformation in states' doctrinal strategies that would lead to change in the character of war. For example, the patterns of war have already gradually shifted from conventional wars to sub-conventional levels affording a reduction in the scale of violence/collateral damage. This lowers the threshold for war-making conflict more frequently. The 2019 Pulwama/Balakot crisis between India and Pakistan demonstrates how, despite the presence of nuclear weapons, precision strikes can be initiated and a limited war fought. Based on the above analogy, this study primarily focuses on the question of how competitive force modernization compels states to a doctrinal modification that, in turn, impacts the conflict dynamics and patterns of warfare in South Asia. The further contention is that the states will increasingly deploy smarter technologies to engage in conflicts to minimize collateral damages, reduce the cost of war and avoid risks of escalation. However, paradoxically, the use of disruptive technologies also provides unpredictable pathways for escalation. States with limited capacities in emerging technologies might increase reliance on nuclear weapons. This leads us to further logical questions, i.e., how can disruptive technologies lead to impact nuclear deterrence and how can negative effects of these technologies be minimized to gain strategic control?

Conceptual argument

Drawn from Thomas Shelling's work,[26] this study aims at using the coercive spectrum (brute force and coercion) approach as a conceptual framework to study changing pattern of warfare in South Asia. Thomas Schelling, in his work, conceptualized the phenomenon of 'compellence' classifying the methods through which military objectives are achieved. Compellence and deterrence are correlated in a way that both are considered to be the major stratagem within the framework of the coercive spectrum.[27] Brute force is the direct use of force to achieve a military objective. On the other hand, coercion is less direct and involves threatening the adversary by inflicting pain without actually hurting, at least in the beginning. For example, one state aims to convince the other to abandon or give up against the coercive demands based on the threat of use of force or limited use of force. Interestingly, Schelling linked the strategies of brute force and coercion with the respective objective, which is either to change or sustain the status quo (see Table 0.1).

Table 0.1 Strategies of Brute Force and Coercion with the Respective Object of Changing or Maintaining the Status Quo

	Brute Force	*Coercion*
Change of Status Quo	*Offence*	*Compellence*
Maintenance of Status Quo	*Defence*	*Deterrence*

Source: Prepared by the authors in line with Thomas C. Shelling's work.[28]

For instance, in the context of employing brute force strategy, change in the status quo is achieved by using offensive measures involving the direct use of (brute) force, while maintenance of the status quo is achieved by using brute force based on a defensive approach. On the other hand, coercion is defined as 'the deliberate and purposive use of overt threats of force to influence another's strategic choices.'[29] Coercion uses two strategies concerning the objectives of changing the status quo or maintaining the status quo. Compellence strategy is based on an offensive approach involving a threat of use of force or limited use of force to bring the change in status quo, while deterrence strategy is based on a defensive approach involving deterrence by denial[30] or deterrence by punishment[31] to prevent the adversary from taking aggressive actions. Thus, deterrence is an attempt to maintain the status quo. It is to make the compellent party understand that taking punitive action will come up with severe consequences. Thus, compellence is the art to achieve or change the status quo, while deterrence is about the maintenance of the status quo. Nevertheless, within the coercion spectrum, in comparison to deterrence, the compellence strategy is difficult to conduct, as 'compliance will be blatant, and will carry with it the added reputational significance of humiliation.'[32]

Since the overt nuclearization of South Asia, the conflict dynamics between the two rivals took a drastic change. Nuclear weapons provoked fear of escalation by putting off a major war/s between the enduring rivals, nevertheless, crises have remained a recurring pattern in India-Pakistan conflict dynamics even after the advent of nuclear weapons. A total of five major crises erupted such as the Kargil crisis (1999), the Twin Peaks Crisis (2001–2002), the Mumbai crisis (2008), the Uri crisis (2016) and the Pulwama crisis (2019) after the overt nuclearization. Thus, this study would evaluate how concurrently, India and Pakistan adopted a compellence strategy or deterrence involving deterrence by punishment or deterrence by denial to counter each other during the above crises. In recent times, the Pulwama-Balakot episode depicts a new pattern of strategic engagement on the coercion spectrum. The surgical strikes based on offensive posture show that India opted for a compellence strategy while Pakistan's response expressed its intent to keep deterrence intact. Concerning the recent patterns of crisis dynamics between the two nuclear rivals, India's limited use of force based on the compellence strategy raises the question, i.e., does India's offensive action depict any change in its strategic force postures? How evolving technologies and shifting strategic postures lead to altering the patterns of warfare, thereby creating new problems of deterrence stability between India and Pakistan.

Core argument

The advanced nuclear technologies, introduction of disruptive technologies and evolving strategic postures have altered patterns of warfare between India and Pakistan. On the one hand, this indicates a significant shift in

conflict dynamics where major wars have become a receding phenomenon while surgical strikes are becoming the standard pattern of strategic engagement. On the other hand, India's employment of a compellence strategy is an indication of a change in its nuclear posture *such as a possible shift from NFU to FU or counterforce temptations/disarming first-strikes.* The phenomenon of smart/surgical strikes generates another puzzle as to how disruptive technologies will gain direct/indirect future military control hence challenging the existing status quo and deterrence stability. Thus, the study comprehensively looks into the impact analysis of advanced nuclear and non-nuclear/disruptive technologies and evolving strategic postures on the conflict dynamics and patterns of warfare between India and Pakistan. It further explores the ways to stabilize deterrence and regulate disruptive technologies between India and Pakistan.

What is different, more innovative and better about the book?

This study is different and innovative in multiple ways. That is, most of the work on India-Pakistan is a part of literature that was produced in the pre-Pulwama/Balakot event or covered India-Pakistan history reflecting on bilateral rivalry and dynamics of strategic stability/instability. The present volume is more contemporary that assesses how new/disruptive technologies and evolving force postures have impacted the conflict dynamics that will gradually alter the patterns of warfare between India and Pakistan. More interestingly, this book makes a unique combination of various essential issues knit together to understand how India's conduct of surgical strikes and Pakistan's corresponding response is a distinct phenomenon where the former adopted compellence while later coming up with deterrence strategies, respectively. There is a significant transformation in conflict and war-fighting strategies where large-scale war/s and massive mobilization of forces might not be possible due to the threat of the use of nuclear weapons but based on doctrinal evolution and induction of disruptive technologies, smart/precision strikes are becoming the standard pattern of engagement. In addition, this book also offers a fresh mechanism for the crisis and deterrence stability of South Asia, which in turn makes this volume interesting and innovative.

Thus, this book is timely, rigorous and futuristic as it offers a new voice and diversity of opinions to the plurality of existing viewpoints based on explanatory research methods by building a correlation between new/disruptive technologies, evolving doctrines and changing patterns of conflicts/warfare. In addition to a large amount of secondary and tertiary sources consulted for this work, it is also based on key in-depth interviews/and personal observations by attending various key national and international seminars/conferences/talks, etc. The book carries in-depth interviews of key policy-makers, military strategists and learned academicians – considering their practical affiliation to policy-making – from India and Pakistan. It is

an interesting, innovative and enriched volume in its approach and research orientation that covers challenges in which impact analysis of new technologies and evolving force postures on the patterns of warfare becomes the central focus. This proposed volume will certainly have a broader target market given the centrality of the debate.

Organization of the chapters

The introduction of the book is vital, which presents the broader structure/framework and rationale of the proposed volume discussing how new/disruptive technologies and evolving force postures have led to alter the patterns of warfare between India and Pakistan. On the one hand, this indicates a significant shift in conflict dynamics where surgical strikes are becoming the standard pattern of strategic engagement. On the other hand, India's employment of a compellence strategy is an indication of a change in its nuclear posture, thereby making smart strikes more likely under the nuclear overhang. The phenomenon of surgical strikes leads us to another puzzle as to how disruptive technologies will gain direct/indirect future military control hence impacting crisis dynamics and deterrence stability. Against this backdrop, the section presents ways and means by which the study is investigated and findings are drawn.

Chapter 1 assesses how the advent of nuclear weapons impacted the conflict dynamics between India and Pakistan during 1998–2016. Overt nuclearization converted all-out wars into limited/wars and sub-conventional insurgencies making them new patterns of bilateral engagement. India and Pakistan used the sub-conventional crises as a means to resolve conflicts under the nuclear overhang. This chapter discusses how these above patterns compelled the two states into the development of offensive technologies and doctrines leading to the fragility of deterrence.

Chapter 2 investigates how the advent of nuclear weapons instead of creating a power balance led the two states into interminable force modernization and aggravated weapon asymmetry that, in turn, negatively impacted deterrence stability. More so, the changing security environment of broader Southern Asia against the backdrop of the global power shift has introduced a power contestation and military competition between the U.S. and China. India, in this changing environment, based on its quest to become a greater power, hedges against China and plays the role of a net security provider for the U.S. in Asia. The study discusses how these developments have led to boost India's strategic confidence towards continued force modernization, which in turn creates a power imbalance and arms racing problems between India and Pakistan, thereby undermining deterrence stability.

Chapter 3 investigates the crisis dynamics and war-fighting strategies between India and Pakistan covering the time from 2016 to 2020. This chapter builds discussion on manifestation of the Indian JDIAF-2017 and LWD-2018, an outbreak of the crises such as Pathankot, Uri and Pulwama/

Balakot and India's scraping of its constitutional articles 370 and 35A on Kashmir. This chapter thus answers the questions, i.e., how recent crises such as Pathankot, Uri and Pulwama/Balakot impacted the conflict dynamics? How India's manifestation of its offensive doctrines and surgical strike stratagem changed the patterns of warfare between India and Pakistan. How does a change in the status of Kashmir result in a crisis of trust and a suspended peace process between the two states?

Chapter 4 discusses that India's gradual force modernization and technological advancement depict transformation in its doctrinal postures such as a possible shift from NFU to FU or counterforce temptations that contradict the policy of minimum deterrence or assured retaliation. To hedge against a pre-emptive counterforce strike, Pakistan might be forced to increase the number of its warheads and missiles and disperse/pre-delegate the use of nuclear missiles. Thus, this chapter attempts to understand the rationale behind the possible shift in India's nuclear posture, assessing how successfully India can launch a counterforce, disarming first strikes in a crisis. What are the drawbacks of this policy shift and how it leads to creating an arms-racing problem and stress for regional deterrence stability? How would this doctrinal shift impact regional conflict dynamics and patterns of warfare between India and Pakistan?

Chapter 5 discusses how a wave of new and disruptive technologies is being developed, and India and Pakistan seem to have not lagged. New technologies always had transformative effects on warfare and military thinking and aim to change the status quo to their advantage once fielded on the battlefield. In this context, certain technologies that have undermined deterrent stability in South Asia are disruptive technologies that include hypersonic weapons, AI-enabled lethal autonomous weapons, drones and space-based and cyber technologies. This chapter primarily focuses on a question such as how disruptive technologies will gain direct/indirect future military control, hence challenging the existing status quo and deterrence stability between India and Pakistan.

Chapter 6 offers fresh mechanisms to regulate advanced nuclear technologies and mitigate the negative effects of disruptive technologies while presenting a way forward to achieve crisis and deterrence stability between India and Pakistan.

The concluding part of the study draws salient features of the book in the form of findings. This part sums up the debate confirming that the advancement of nuclear technologies and the advent of disruptive technologies have transformed conflict dynamics and the patterns of warfare between India and Pakistan. This section sums up the mechanism offered in this book to stabilize deterrence, regulate militarization of Artificial Intelligence and disruptive technologies between India and Pakistan. The volume in this section also tests the adequacy of theoretical underpinnings such as compellence vs deterrence in the case of India and Pakistan.

Notes

1 Moeed Yusuf, *Brokering Peace in Nuclear Environments: US Crisis Management in South Asia* (Stanford, C.A.: Stanford University Press, 2018), p. 4.
2 The Kashmir dispute started after the partition of India in 1947 as a dispute over the former princely state of Jammu and Kashmir and escalated into three wars between India and Pakistan and several other armed skirmishes. For more details, see Stephen P. Cohen, *Shooting for a Century: The India-Pakistan Conundrum* (Washington, D.C.: Brookings Institution Press, 2013).
3 For details, see Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (New York, N.Y.: W.W. Norton, 2002).
4 Patrick Morgan, *Deterrence Now* (Cambridge: Cambridge University Press, 2003).
5 Bernard Brodie, ed., *Absolute Weapons: Atomic Power and World Order* (New York, N.Y.: Harcourt Brace, 1946), p. 76; Albert Wohlstetter, 'The Delicate Balance of Terror,' *Foreign Affairs Journal* 37, no. 2 (1959): pp. 211–234, https://doi.org/10.2307/20029345.
6 Colin S. Gray, *The Second Nuclear Age* (London: Lynne Rienner, 1999); Paul Bracken, 'The Second Nuclear Age,' *Council on Foreign Relations* 79, no. 1 (January–February 2000): pp.146–156, https://doi.org/10.2307/20049619; Michael Krepon, 'The Stability-Instability Paradox in South Asia,' *Stimson Centre*, January 1, 2005, https://www.stimson.org/2005/stability-instability-paradox-south-asia/; and also see Sameer Lalwani and Hannah Haegeland, eds., *Investigating Crises: South Asia's Lessons, Evolving Dynamics, and Trajectories* (Washington, D.C.: Stimson Centre, 2018).
7 Brodie, *Absolute Weapons*; Wohlstetter, 'Balance of Terror,' pp. 211–234; Robert J. Art, 'Between Assured Destruction and Nuclear Victory,' in *Nuclear Deterrence: Ethics and Strategy,* ed. Russel Hardin (Chicago, I.L.: University of Chicago Press, 1985); Morgan, *Deterrence Now*; and Herman Kahn, *On Escalation* (New York, N.Y.: Praeger, 1965).
8 For instance, Kenneth N. Waltz, *The Spread of Nuclear Weapons: More May Be Better*, Adelphi Papers, No. 171 (London: International Institute for Strategic Studies, 1981); Kenneth N. Waltz, 'Nuclear Myths and Political Realities,' *American Political Science Review* 84, no. 3 (1990): pp. 731–745, https://doi.org/10.2307/1962764; Sagan, and Waltz, *The Spread of Nuclear Weapons*; John J. Mearsheimer, 'Nuclear Weapons and Deterrence in Europe,' *International Security* 9, no. 3 (1984): pp. 19–46, https://doi.org/10.2307/2538586; John J. Mearsheimer, 'Back to the Future: Instability in Europe after the Cold War,' *International Security* 15, no. 1 (1990): pp. 5–56, https://doi.org/10.2307/2538981; John J. Mearsheimer, 'The Case for a Ukrainian Nuclear Deterrent,' *Foreign Affairs* 72, no. 3 (1993): pp. 50–66, https://doi.org/10.2307/20045622; and John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York, N.Y.: Norton, 2001); and Bruce Bueno De Mesquita and William H. Riker, 'An Assessment of the Merits of Selective Nuclear Proliferation,' *Journal of Conflict Resolution* 26, no. 2 (1982): pp. 283–306, https://www.jstor.org/stable/173903.
9 For instance, Peter D. Feaver, 'Proliferation Optimism and Theories of Nuclear Operations,' *Security Studies* 2, no. 3–4 (November 25, 2010): pp. 159–191, https://doi.org/10.1080/09636419309347523; Scott D. Sagan, 'The Perils of Proliferation: Organization Theory, Deterrence Theory, and the Spread of Nuclear Weapons,' *International Security* 18, no. 4 (Spring 1994): pp. 66–107, https://doi.org/10.2307/2539178; Peter D. Feaver, 'Optimists, Pessimists, and Theories of Nuclear Proliferation Management,' *Security Studies* 4, no. 4 (January 9, 2008): pp. 754–72, https://doi.org/10.1080/09636419509347602; Sagan and Waltz, *The Spread of Nuclear Weapons*; Devin T. Hagerty, 'Nuclear Deterrence in South Asia: The 1990 Indo-Pakistani Crisis,' *International Security* 20, no. 3 (Winter

1995–1996): pp. 79–114, https://doi.org/10.2307/2539140; David J. Karl, 'Proliferation Pessimism and Emerging Nuclear Powers,' *International Security* 21, no. 3 (Winter 1996–1997): pp. 87–119, https://muse.jhu.edu/article/447447; Jordan Seng, 'Less Is More: Command and Control Advantages of Minor Nuclear States,' *Security Studies* 6, no. 4 (Summer 1997): pp. 50–92, https://doi.org/10.1080/09636419708429322; and Peter D. Feaver, 'Neooptimists and Proliferation's Enduring Problems,' *Security Studies* 6, no. 4 (Summer 1997): pp. 93–125.

10 Robert Jarvis, 'Cooperation under the Security Dilemma,' *World Politics,* 30, no. 2 (January 1978): pp. 167–214, https://doi.org/10.2307/2009958.

11 Glenn Herald Snyder, *The Balance of Power and the Balance of Terror* (San Francisco, C.A.: Chandler, 1965); Robert Jervis, 'Why Nuclear Superiority Doesn't Matter,' *Political Science Quarterly* 94, no. 4 (1979): pp. 617–633, https://doi.org/10.2307/2149629; Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, N.Y. and London: Cornell University Press, 1989).

12 See Statement of Inter-Services Public Relations, 'Pakistan Successfully Conducted Training Launch of Short Range Surface to Surface Ballistic Missile "Nasr" to Enhance the Operational Efficiency of Army Strategic Forces Command Besides Re-Validating the Desired Technical Parameters,' No PR-32/2019-ISPR, January 24, 2019, https://www.ispr.gov.pk/press-release-detail.php?id=5173/; and Ankit Panda, 'Pakistan Conducts Test of Nuclear-Capable Nasr Missile,' *The Diplomat*, January 26, 2019, https://thediplomat.com/2019/01/pakistan-conducts-test-of-nuclear-capable-nasr-missile/.

13 See 'Joint Doctrine Indian Armed Forces-2017' (New Delhi: Directorate of Doctrine, Headquarters Integrated Defense staff, 2017); and Ankit Panda, 'India's 2017 Joint Armed Forces Doctrine: First Takeaways,' *The Diplomat,* April 28, 2017, https://thediplomat.com/2017/04/indias-2017-joint-armed-forces-doctrine-first-takeaways/.

14 See Indian Army, *Land Warfare Doctrine-2018*, p. 3.

15 Ibid, p. 13.

16 See Thomas C. Schelling, *Arms and Influence* (New Haven, C.T.: Yale University Press, 1966).

17 See Statement of Lt. General (retd) Khalid Kidwai quoted in Murtaza Ali Shah and Hamza Azhar Salam, 'Don't Take Pakistan's N-Capability as a Bluff: Gen Kidwai,' *The News,* February 8, 2020, https://www.thenews.com.pk/print/610630-don-t-take-pakistan-s-n-capability-as-a-bluff-gen-kidwai.

18 Rajesh Basrur, *Minimum Deterrence and India's Nuclear Security* (Stanford, C.A.: Stanford University Press, 2006), p. 100.

19 Shannon N. Kile and Hans M. Kristensen, 'Indian Nuclear Forces,' in *SIPRI Yearbook 2017* (Oxford: Oxford University Press, 2017), pp. 641–646; Yogesh Joshi, Frank O'Donnell and Harsh V. Pant, *India's Evolving Nuclear Force and Its Implications for U.S. Strategy in the Asia-Pacific* (Strategic Studies Institute and U.S. Army War College Press, 2016), pp. 3–11.

20 Christopher Clary and Vipin Narang, 'Doctrine, Capabilities, and (In)Stability in South Asia,' in *Deterrence Stability*: *Escalation Control in South Asia*, eds. Michael Krepon and Julia Thompson (Washington, D.C.: Stimson, 2013), pp.93–106.

21 See Shivshankar Menon, *Choices: Inside the Making of Indian Foreign Policy* (Washington, D.C.: Brookings Institution Press, 2016); Michael Krepon, 'The Counterforce Compulsion in South Asia,' *Stimson Centre,* April 27, 2017, https://www.stimson.org/2017/counterforce-compulsion-south-asia/.

22 Andrew Futter and Benjamin Zala, 'Strategic Non-nuclear Weapons and the Onset of a Third Nuclear Age,' *European Journal of International Security* 6, no. 3 (August 2021): pp. 257–277, https://doi.org/10.1017/eis.2021.2.

23 David W. Barno, 'War in the Fourth Industrial Revolution,' *CSS,* July 16, 2018, https://isnblog.ethz.ch/uncategorized/war-in-the-fourth-industrial-revolution.
24 See Antoine Bousquet, *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity* (London: Hurst & Company, 2009).
25 Andrew Futter, 'Deterrence, Disruptive Technology and Disarmament in the Third Nuclear Age,' *University of Leicester*, April 2022, https://hiroshimaforpeace.com/wp-content/uploads/2022/04/Deterrence-Disruptive-Technology-and-Disarmament-in-the-Third-Nuclear-Age.pdf.
26 See Schelling, *Arms and Influence*.
27 Frank O'Donnell, 'Review Essay: Stabilizing Nuclear Southern Asia,' *Asian Security* (May 30, 2019): p. 129, https://doi.org/10.1080/14799855.2019.1620207.
28 Kin Ohsishi 'Compellence and Coercive Diplomacy: Concepts and Characteristics,' *National Institute for Defense Studies,* Briefing Memo (March 2019): p. 1, http://www.nids.mod.go.jp/english/publication/briefing/pdf/2019/briefing_e201903.pdf
29 Lawrence Freedman and Srinath Raghavan, 'Coercion,' in *Security Studies: An Introduction*, ed. Paul D. Williams (New York, N.Y.: Routledge, 2008), p. 217.
30 Deterrence by denial strategies seeks to deter action by making it infeasible or unlikely to succeed, thus denying a potential aggressor confidence in attaining its objectives-deploying sufficient local military forces to defeat an invasion, for example.
31 Deterrence by punishment strategies seeks to deter the adversary from taking a certain course of action by manipulating behaviour in a way to augment the cost of the action. It is basically based on the notion of 'unacceptable damages,' including through massive nuclear retaliation.
32 Freedman and Raghavan, 'Coercion,' p. 218.

1 Nuclear Technologies and Conflict Dynamics

Introduction

This chapter investigates the impact of the advent of nuclear weapons on the conflict dynamics and warfare between India and Pakistan from 1998 to 2016. Overt nuclearization, though preventing an all-out war has led both states into limited and sub-conventional insurgencies while challenging the spirit of nuclear deterrence. Indeed, deterrence is generally understood as an ability to dissuade a state from embarking upon a certain course of action.[1] Stable deterrence leads to preventing war, reducing uncertainty and securing peace. Security dilemma,[2] under such conditions, is toned down while states behave rationally. On the contrary, unstable deterrence leads to making wars more likely and peace precarious. States under such conditions behave irrationally, and uncertainty increases while the nuclear threshold decreases.

The second scenario became evident in South Asia after the overt weaponization[3] of the region. For example, less than a year after the overt detonation of nuclear weapons, the outbreak of the Kargil War between India and Pakistan validated the notion of the stability-instability paradox.[4] The settlement of the Kargil conflict led to the introduction of proxies and sub-conventional crises as new patterns of bilateral engagement. For example, the eruption of the Twin Peaks Crisis in 2001–2002 validated how nuclear weapons have shifted states' reliance from major conventional wars to proxies/minor wars. Both states somewhat perceived that nuclear weapons are destructive, and not useable, nonetheless, victory can still be achieved under the nuclear overhang. Against the backdrop of these events, the smaller interface of the two states' military forces led India to perceive the gaps associated with its military regiments and doctrines, which compelled India towards the development of an offensive/war-fighting CSD. In a compulsive response, Pakistan also brought transformation in its military doctrine by developing low-yield weapons and introducing FSD to counter India's offensive CSD. This technological and doctrinal transformation, such as India's CSD and Pakistan's low-yield weapons, could not prevent insurgencies; however, these changes led to minimizing the scale of violence but increase the frequency of crises (discussed below). This chapter specifically focuses on the question

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of how the advent of nuclear technologies impacted conflict dynamics by increasing the frequency of crises and gradually decreasing the scale of violence leading to the fragility of deterrence.

Nuclear deterrence: A march from major to minor wars

The end of World War II, for instance, witnessed the innovation of nuclear weapons along with their delivery means, which redefined the character of warfare. The introduction of nuclear weapons by the U.S. and later their use stimulated scholarship on the concept of deterrence. Although the world has never witnessed a two-sided nuclear war, nuclear competition between the U.S. and the Soviet Union (now Russia) during the Cold War taught us difficult lessons. In this context, U.S.-based think tanks such as RAND and Western scholarship led by Bernard Brodie,[5] Thomas C. Shelling[6] and Albert Wohlstetter[7] made substantial contributions to the understanding of the role of nuclear weapons in states' national security policies. Such strategic scholarship indeed helped both the U.S. and the erstwhile Soviet Union in managing contingency plans and military budgets and recognizing the value of arms control negotiations.

For example, Brodie propagated that the possibility of 'destruction' inherent in the use of nuclear weapons has made victory unachievable, but at the same time, he taught us that through risks of retaliation states could psychologically manipulate an adversary's mind.[8] On a similar note, Robert J. Art contended that 'balance in the nuclear age is the power to hurt not the power to defeat.'[9] Shelling reminded us that '[v]ictory is no longer a prerequisite for hurting the enemy' which later modified and constrained states' behaviour in the rational direction. The above notions contextualize what we now refer to as Deterrence Theory.[10] Specifically speaking, the nuclear deterrence theory, as propounded by Brodie,[11] which is grounded in political realism, enriches our thought process to comprehend the potential character of nuclear weapons.

On a similar note, Waltz highlights that strategies bring ends and means together and that 'deterrence is achieved not through the ability to defend but through the ability to punish.'[12] Patrick Morgan argues that 'deterrence theory is the underlying principle on which the strategy rests.'[13] Notably, states' nuclear use and/or non-use decisions, military forces' training, their safety mechanisms and elites' rational policy-making behaviour rest with its doctrinal policy. It is important to note that the 'nuclear doctrines and strategies are peacetime contemplation about how military forces will be used in the war, the preparation that results from it in terms of the type of the weapons acquired, the kind of force postures that are adopted, and training given to those who use these weapons.'[14] Waltz strongly argues, 'states are the principal actors in the anarchic environment and relative power among them is the critical factor that determines differences in their behaviour.'[15] Thus, the classical realists argue that the states seek to maximize their power which in turn encourages them to project offensive and revisionist

strategies.[16] The neo-realist scholars posit a different position within realism which says that 'the states' primary goal is to ensure their security - which encourages them to project defensive strategies to protect the status quo.'[17]

Nuclear deterrence in South Asia is linked to these above explanations of classical realism and neo-realism: for example, Indian policy is based on Gandhian and Nehruvian philosophy[18] of Greater India, which means India aspired to become a great power[19] from the outset. Realism helps us understand how Nehru had envisioned the slogan of a Greater India, 'which for him would play a greater-power role in world affairs commensurate with its size and power potential.'[20] Thus, India's nuclear policy-making originated from distinct values attributed to the possession of nuclear weapons: its historic rivalry with China and Pakistan, ambitions for maximization of power, the country's prestige, recognition and standing in the international community to achieve a great power status. On the contrary, Pakistan's nuclear objective was not to seek changes in the regional and global securitization process and structure but to maintain the status quo and maximize its national security against perceived threats, primarily from India.[21] Taking guidance from realists' interpretations cited above, it is argued that states in South Asia failed to grasp the cognitive understanding of the role of nuclear weapons and the spirit of nuclear deterrence. Partly, it is due to dearth of influence of indigenous strategic scholarship on policy behaviour of the states on directing them to grasp the actual spirit of nuclear deterrence and the value of defensive policies and/or arms control negotiations toolkit.

A new security environment was somewhat created by the then Prime Minister of Pakistan, Muhammad Nawaz Sharif, and the then Prime Minister of India, Atal Bihari Vajpayee, through a renewed peace process, i.e., the Lahore Declaration, signed in February 1999.[22] Under its terms, a mutual understanding was reached towards the management of relationships and avoiding accidental and unauthorized operational use of nuclear weapons, avoiding nuclear race, as well as an aversion to both non-conventional and conventional conflicts. The two premiers agreed that both the states' Foreign Ministers will meet periodically to discuss all issues of mutual concerns, hold consultations to further liberalize the visa and travel regime and appoint a two-member, ministerial-level committee to examine humanitarian issues relating to civilian detainees and missing prisoners of war. Widely appreciated in the public and policy circles in Pakistan and hailed by the global community, the agreement lost impetus after the outbreak of the 1999 Kargil War.

Kargil – limited war

The Kargil crisis has roots in the unresolved Kashmir dispute, which is the main source of major and minor wars fought between India and Pakistan.[23] For some, the Kargil crisis was Pakistan's strategic compulsive retaliatory response to the Siachen conflict.[24] The Siachen was a military conflict between India and Pakistan over the disputed Siachen Glacier region in

Kashmir. The conflict began in 1984 with India's successful conduct of *Operation Meghdoot* during which it gained control of the Siachen Glacier (an unoccupied area that is not demarcated). Relations between India and Pakistan since haven't remained steady.

It appears that the Kargil War was initiated by Pakistan to pressurize India in the Siachen region.[25] Nevertheless, most of the explanations indicate that Pakistan also had a set of other aims: (a) to attract global attention to the issue of Kashmir, which is long languishing on the agenda of the United Nations Security Council (UNSC)[26]; (b) to get control of the Dras-Kargil highway; (c) cutting off Srinagar from Leh and trap Indian troops at Siachen glacier; (d) raise the slogan of an uprising in the Kashmir valley; and (e) raise questions on the sanctity of Line of Control (LoC),[27] if not possible to alter it.[28]

Against this backdrop, the Kargil conflict started in May and ended in July 1999 while covering the area of a 200-kilometres front on the LoC.[29] According to Pakistani sources,[30] approximately 600 Kashmiri freedom fighters captured the Indian military posts, which they used to vacate in the winters in the mountainous Kargil-Dras region, although India claimed that the intruders were not the freedom fighters but regular personnel of the Pakistan army and Afghan infiltrators.[31] Importantly, as the clashes started between the freedom fighters and Indian armed forces on 6 May, more than 300 causalities were recorded, mostly on the Indian side and the reason for this is considered to be the control of strategic posts by the freedom fighters.[32] Heavy losses, difficult fighting terrain and well-equipped fighters occupying strategic peaks forced Indian armed forces to use airstrikes involving aircraft such as Mirage-2000 and MiG-21 and the deployment of a massive number of ground troops. In the month of June, India intensified the operation by using air strikes, artillery fire and infantry assaults to recapture a strategic mountainous region. India took over control of the two critically strategic positions, such as Dras and Batalik, that were considered significant for the logistical support to the Indian troops at Siachen.[33] As per the estimates, India claimed a smaller number of causalities; however, the Indian side suffered 265 deaths together with 451 wounded, whereas on the Pakistani side, the number was 486 deaths.[34] A total of two Indian Air Force (IAF) fighter jets (MIG-21 and MIG-27) were shot down by the Pakistan Air Defence. One of the pilots was also captured by the Pakistani troops and was later released on 3 June 1999.[35]

Regardless of the intensity of the conflict, both arch-rivals were restrained and remained confined to the Kargil region. India was careful in not crossing the LoC.[36] P. R. Chari stated that the 'leaderships in India and Pakistan acted with the circumstances and terminated the hostilities in an orderly manner, although American pressure undoubtedly catalyzed this process.'[37] China expressed neutrality in the conflict and emphasized both parties resolve the issue peacefully.[38] The U.S. used its leverage by playing the role of a broker in de-escalating the conflict due to the fear of the use of nuclear weapons. This is evident concerning the visit of the then Pakistani Prime Minister Nawaz Sharif to the U.S. and, subsequently, the signing of a declaration in July of

the same year.[39] Prime Minister Nawaz Sharif made a personal request to the fighters to withdraw bringing the conflict to an end.[40]

The Kargil misadventure indicated the fragility of nuclear deterrence as nuclear weapons could not avert war. That said, the two states swiftly re-established the diluted deterrence by de-escalating the conflict after U.S.' intervention. This event appeared to be riskier, hastily crafted, and a swift war plan that was not conceptualized well by the initiators at the onset of the conflict. These states' overreliance on the U.S.' mediation presumably pushed them into this hastily crafted misfortune. Yet, the war was fought in a measured and controlled manner, keeping the scale of violence down while leading to de-escalation due to the fear of the use of nuclear weapons.

Nevertheless, the Kargil conflict not only undermined the spirit of the deterrence theory but also significantly impacted the peace initiatives undertaken before and after the overt nuclearization.[41] However, India and Pakistan, after the Kargil War, in some way, tried to normalize bilateral relations. For example, India undertook a peace initiative and announced a unilateral ceasefire which Pakistan reciprocated.[42] In these circumstances, a historic two-day Agra Summit from 14 to 16 July 2001 was held between the then Prime Minister of India, Atal Bihari Vajpayee, and the President of Pakistan, Pervez Musharraf. The meeting was organized to resolve long-standing issues between the two opponents. The discussions revolved around a proposal on nuclear risk reduction, issues involving the Kashmir dispute and cross-border terrorism. There was some progress achieved; however, the expected end did not come through. Both sides agreed in principle that the settlement of the Kashmir issue would pave the way for the normalization of the relations between India and Pakistan. They also agreed to hold annual summits and biannual meetings of the foreign ministers to tackle the three issues, i.e., peace, security and confidence building measures (CBMs); Jammu and Kashmir; and narcotics and terrorism. However, the negotiations broke down and the process collapsed, the Agra treaty was never signed, but the leaderships of the two states expressed their willingness to continue with the negotiation process. Notably, the peace process could not prevent the reoccurrence of the crises as another incident, i.e., the Twin Peaks Crisis erupted amid the peace process that further undermined the deterrence stability.

Twin Peaks Crisis (2001–2002)

Another crisis erupted after successive terrorist attacks in India in 2001 and 2002, reckoned as *the Twin Peaks Crisis*. In the first incident, five militants attacked the Indian Parliament, killing 14 people while leaving 22 injured, thus resulting in the massive mobilization of the armed forces and eyeball-to-eyeball confrontation between the two nuclear states. In the second incident, the militants ambushed an Indian Army installation, near the town of Kaluchak, in the capital of Jammu and Kashmir on 14 May 2002, leaving 31 dead including women and children. India blamed Kashmiri militants such

as Lashkar-e-Taiba (LeT) and Jaish-e-Muhammad (JeM) for these attacks[43] and pointed towards Pakistani intelligence agencies for 'sponsoring terrorism to pressure India to relinquish Kashmir.'[44] Pakistan, in turn, condemned the attacks and denied Indian accusations of any sort of involvement.

India, in turn, launched *Operation Parakram* on 18 December 2001, the largest mobilization of the Indian forces since the 1971 war creating a high probability of escalation of this conflict.[45] India deployed almost 500,000 troops at the LoC while demanding concrete actions against the terrorist outfits that were assumed to be operating from Pakistan.[46] India launched the offensive operation employing a coercive strategy vis-à-vis Pakistan to compel it to take concrete action against the alleged terrorist outfits based on Pakistani soil. Pakistan denied the Indian charges and reciprocated by counter-mobilization of the troops. Pakistan communicated the possibility of the use of nuclear weapons in case India decided to launch an attack across the international border.[47] Pakistan in response to India's *compellence strategy* adopted the *deterrence strategy* to dissuade the adversary from taking a certain course of action. Additionally, Pakistan reinforced the credibility of its deterrence through signalling, i.e., official statements and several missile tests amid the crisis.[48]

Notably, *Operation Parakram* primarily was designed to punish Pakistan before the latter invites a third-party mediation. Christopher Clary, in this regard, stated, 'In the wake of the Twin Peaks Crisis, India not only blamed Pakistan for supporting non-state actors to create violence but also launched Operation Parakram. However, the Indian Operation lost the element of surprise thereby allowing enough space to the international community for mediation to de-escalate the crisis.'[49] Indeed, the U.S. once again got involved to defuse the tension[50] as a crisis manager to restore peace by preventing Pakistan's diversion from the Western to the Eastern border, as the latter was fighting a war on terror as a key ally of the U.S. in Afghanistan. Based on the 'pivotal deterrence diplomacy,'[51] Colin Powell, former U.S. Secretary of State, acknowledged the centrality of the Kashmir issue during his talks in Islamabad[52] and also raised the problem of alleged cross-border terrorism with Pakistani leadership. Subsequently, he assured policy-makers in New Delhi that Pakistani leadership has expressed strong resolve on not to tolerate its territory to be used for cross-border terrorism.[53] The armed forces of the two nuclear possessor states remained engaged face-to-face for a period of ten months until India finally called off the offensive military endeavour in October 2002.[54]

The actual objectives of the Indian military operation were uncertain in nature; however, India manifested through its massive troop mobilization that it would not cater to the threat of nuclear weapons and intended to wage a punitive war against Pakistan due to the latter's alleged support to Kashmiri freedom fighters.[55] Nevertheless, Pakistan responded to the compellence strategy by increasing the cost and fear of punishment for India making it unable to take any intended coercive action. For instance, Pakistan's prompt

counter-mobilization of troops and clear communication of using nuclear weapons in case of any eventuality from the Indian side pushed the latter to roll back its offensive military manoeuvres. India, a conventionally superior country, failed to achieve its political and military objectives vis-à-vis a conventionally weaker Pakistan. To sum up, India's *compellence strategy* was dominated by Pakistan's *deterrence by punishment* model during this crisis.

In contrast to the previous crisis, this time, both the rival states had adequate nuclear stockpiles to inflict unacceptable damage on each other. Nevertheless, the Twin Peaks Crisis did not escalate into a major conventional war as both states behaved rationally and displayed restraint. More so, this intensified episode didn't fully obstruct the peace process between the two rivals as after pulling the military forces off the international border, the two states got involved in a dialogue process as is discussed below.

Resumption of dialogue process

Since the summer of 2003, the two states made efforts to normalization of the relations by expressing intentions to resolve all the outstanding issues including the Kashmir dispute. In this regard, India initiated a limited withdrawal of the forces in the fall of 2003, which was reciprocated by Pakistan.[56] The then Indian Prime Minister Vajpayee's initiative of 18 April 2003 proved to be a significant breakthrough for the resumption of the dialogue process, and it became much evident with the appointment of the High Commissioner, the opening of the communication and transportation channels and people-to-people contact. In the subsequent year, the 12th South Asian Association of Regional Cooperation (SAARC) Summit was held in Islamabad. The Joint statements of Premier Vajpayee and President Musharraf expressed[57] their resolve for normalization of the relations and reiterated to further improve the security environment that was created by initiating various CBMs in the past to bring the peace process to its logical conclusion.

One of the significant developments, concerning the resolution of the Kashmir dispute, was the four-point formula proposed by President Musharraf. This grand bargain proposed the following approachable points: (a) Kashmir should have the same borders, but free movement across the region be allowed for people on both sides of the LoC; (b) there should be self-governance or autonomy but not independence; (c) region should be demilitarized such as phased wise withdrawal of the troops from the region should be initiated; and (d) a joint supervision mechanism be deployed in the state of Jammu and Kashmir involving India, Pakistan and Kashmir. Nevertheless, President Musharraf had significantly diluted Pakistan's original stance/position on Kashmir. For example, Musharraf's four-point formula brought five major changes in Pakistan's decades long policy on Kashmir by (a) setting aside the UN resolutions on plebiscite[58]; (b) converting policy of self-determination into self-governance; (c) abandoning religion as a criterion; (d) advising Kashmiris to talk to New Delhi; and (e) accepting the LoC

provided it is combined with joint management, an issue pre-eminently liable to compromise. The Musharraf formula met divergent and diverse responses from Pakistan, Kashmir and India,[59] and could not be materialized.

Later, Prime Minister of India, Manmohan Singh, disqualified any consideration of such proposals by underlining the state of Jammu and Kashmir as an integral part of India and that there would be no redrawing of the international boundaries or rearrangement of the regions that would blow of the communal dimensions.[60] The Indian claim over the whole area of Jammu and Kashmir, including Pakistani-administered Kashmir, was repeated in March 2006 by the Indian government's official protests over the proposed construction of the Bhasha dam in the territory which comes under the Pakistani-administered Kashmir.[61] The proposal of open or soft borders was explained by Prime Minister Singh as 'making LoC a porous border so that there could be free flow of ideas and people between the two parts of Kashmir which will, according to him, one day make LoC irrelevant.'[62] Demilitarization was not agreeable for India because they considered it their prime national security issue. Against the above backdrop, the four-point formula failed to gain any acceptance, peace process resumed, but it could not prevent the reoccurrence of cross-border attacks/insurgencies.

Mumbai attacks – 2008

After not a long interval of the peace process, a series of new violent attacks rocked the Metropolitan city of Mumbai in November 2008. The terrorist attack cost 172 lives including 6 U.S. citizens injuring more than 300 people and, importantly, 9 out of 10 attackers also got killed. India at once claimed that the terrorists were trained in Pakistan and were linked to a Pakistani-banned non-state actor, LeT.[63] The then Indian Foreign Minister, Pranab Mukherjee, stated that terrorists had a connection to Pakistan, and afterwards, the then State Deputy Home Minister, R. R. Patel Maharashtra, declared that the arrested terrorist was a Pakistani national.[64] India successfully portrayed itself to be the victim of cross-border terrorism possibly to slander Pakistan in the international community. The then Prime Minister of Pakistan, Yousaf Raza Gilani, condemned the terrorist attacks and declared, 'I condemn these attacks strongly. Our grieves are with the families and friends of those killed and injured. Pakistan and India will continue their joint struggles to counter the actions of terrorists.'[65] Pakistan's then President, Asif Ali Zardari, also condemned the terrorist acts and pointed out the involvement of non-state actors in the deadly act and their respective agendas that are challenging the state of Pakistan.[66]

India not only blamed Pakistan for the Mumbai attacks but also threatened to conduct *surgical strikes* to target alleged terrorist camps based in Pakistan. India employed a *compellence strategy* intending to coerce Pakistan to eliminate the headquarters of the militant organizations based on its territory that was allegedly responsible for the terrorist attack in the

Indian-administered Kashmir or elsewhere in India. Importantly, ambitious CSD was developed to wage a limited war against Pakistan as a punitive measure in the wake of any terror incident. Indian officials' offensive statements to conduct a surgical strike inside Pakistan to target alleged terrorists' outfits created fear in Islamabad. The U.S. Senator, John McCain, in a meeting with the then Pakistani Prime Minister Gillani, said, 'If Pakistan did not act swiftly to arrest the people involved, India would be left with no option but to conduct aerial operations against select targets in Pakistan.'[67] Pakistan, in turn, largely condemned the attacks in the first place. It further responded by mobilizing its Air Force promising a matching response.[68] Importantly, once again, non-state actors brought the two nuclear possessor states to the brink of war. The aggressive statements and subsequent military mobilization also created an alarming situation for the U.S. As the military operation in Afghanistan was in a critical phase, any confrontation between India and Pakistan could have a severe impact on the conduct and, subsequently, achievement of the U.S. strategic objectives in Afghanistan. As part of its de-escalation tactics, the U.S. senior officials visited both countries in parallel and, more specifically, pressurized Pakistan to act against the terrorist groups. Later on, the U.S. appreciated Pakistan's actions against LeT and, Jamaat-ud-Dawa (JuD) and detaining of their masterminds. The efficient and effective intervention of the U.S. mobilized both the nuclear possessor states to defuse tensions to avoid escalation of the crisis. To sum up, India employed a *compellence strategy* to achieve its respective diplomatic and military goals but failed. Pakistan, based on a *deterrence strategy,* deployed its air force to counter the threat of expected surgical strikes expressed in the statements of Indian officials. Pakistan's *deterrence by denial strategy* dominated the Indian *compellence strategy* during the Mumbai crisis as the former denied the incentive for the latter to launch surgical strikes across the international border. The threat of escalation prevented India and Pakistan to exercise restraint, but this event carried all the potential to destabilize deterrence.

A critical analysis suggests that there are three major reasons for the culmination of the crisis in 2008. (1) The U.S. intervention as a broker de-escalated the tension; (2) the two nuclear possessor states behaved rationally by de-escalating tension due to fear of the use of nuclear weapons; and (3) India's inadequate military capabilities restrained its punitive actions against Pakistan. India, therefore, considered improving the CSD to conduct future punitive actions against Pakistan in case of the reoccurrence of any such attacks.[69] India's adventurous/offensive CSD was not more than a concept at the time; in fact, its armed forces lacked the requisite military capabilities. This is why Pakistan's former Chief of Army Staff (COAS) opined that full operationalization of CSD would take a few years.[70] On the other hand, it is asserted that India did not have exact intelligence on Pakistan's likely response/retaliation to the Indian offensive strategy. Further, despite India's global mainstreaming, it was Pakistan's role in Afghanistan as a frontline

state in the U.S. war against terrorism that forced India to restrain from deploying the CSD.[71] Importantly, the CSD was still in the development phase and lacked structural and organizational compatibility for implementing an adventurous offensive strategy in the form of limited war. That said, India gradually improved its CSD, as discussed below.

Evolution of offensive military doctrines

Based on the aforementioned debate, the ensuing section evaluates how crisis dynamics compelled the two states to convert their military doctrines into offensive/war-fighting mode. The two states, instead of averting wars, built reliance on offensive doctrines to fight and win wars under the nuclear domain.

Evolution of Indian nuclear doctrine

The draft IND was formally announced on 17 August 1999, which was operationalized later in 2003. The major features of the IND were transparent, but some parts were kept deliberately ambiguous and are still vague. For example, India tried to lay down the 'broad principles for the development, deployment, and employment of its nuclear forces.'[72] Based on the Greater India philosophy, India integrated the normative component in its draft nuclear doctrine. For example, the draft doctrine highlighted that nuclear weapons possess 'the gravest threat to humanity, peace, and stability in the international system.'[73] The IND exhibited that 'India's nuclear weapons would be used primarily in retaliation to a nuclear attack.'[74] The fundamental 'aim of these weapons is to deter the use and threat of use of nuclear weapons against India.'[75] The IND further states, India will not be the first to use nuclear weapons[76] and that India maintains 'operationally prepared nuclear forces'[77] with the 'capability to shift from peacetime deployment to fully employable forces in the shortest possible time.'[78]

In this context, India declared its intentions to maintain 'a minimum nuclear deterrence' but a credible one.[79] In its IND, India did not define the term minimum as to how much is sufficient distinctively towards China and/or Pakistan (in terms of the number of arsenals and forces). However, it vaguely highlighted that India had to maintain sufficient, survivable and operationally prepared nuclear forces, with robust command and control (C2) systems and effective intelligence and early warning capabilities.[80]

The IND propagates a policy of Massive Retaliation to inflict unacceptable damage on the aggressor. It makes logical sense that Massive Retaliation is affixed to a second-strike capability and no-first-use policy. In essence, India's nuclear policy is a strategic puzzle that demands transparency in its targeting strategy instead of policy, i.e., a clear distinction between countervalue and counterforce strategy. India initially projected the NFU policy in two ways: (a) 'nuclear weapons will only be used in response to a nuclear attack on Indian territory or on Indian forces [stationed] anywhere.'[81] The

word/provision, 'anywhere,' suggests the use of nuclear weapons beyond Indian borders; and (b) furthermore, IND says that 'in the event of a major attack against India, or Indian forces anywhere with biological or chemical weapons, it will retain the option of retaliating with nuclear weapons.'[82] These two provisions make NFU policy doubtful. The IND declares NFU against non-nuclear states, though this pledge may be given up if the Indian territory or forces are attacked with chemical or biological weapons. P. R. Chari states that the policy in response to chemical and biological weapons seems questionable as to how a 'major attack' with biological and chemical weapons can be identified.[83] Who will identify the actual attacker in a short time, whether the fire comes from a nuclear or a non-nuclear weapon state?

Indeed, India then did not clarify its position on a launch-on-warning (LOW) or a launch-under-attack (LUA) posture for its nuclear force. It has been noted through various past accounts that the Indian nuclear forces are still ostensibly kept de-alerted and de-mated. This would disqualify LOW or LUA strategies, which are no longer justified in the present environment, as is discussed in the subsequent part of this volume. Ashley J. Tellis highlighted the Indian nuclear posture as 'limited in size, separated in disposition, and centralized on command.'[84] Contrary to this, Vipin Narang invalidates this hypothesis calling it a myth[85] in the present changing environment (discussed in the subsequent chapters).

The Indian doctrine also refers that 'it maintains a robust command and control system' and there are certain provisions in it. For example, it highlights that 'nuclear weapons shall be tightly controlled and released for use at the highest political level.'[86] Theoretically, Indian strong political and democratic credentials support Indian rationale on nuclear use or NFU policy. There is more space for negotiations, rationality and calculated decision when nuclear weapons are under civilian control. The doctrine also highlights that 'for effective employment, the unity of command and control of the nuclear forces including dual capable delivery systems shall be ensured.'[87] A Command, Control, Communications, Computers, Information and Intelligence (C4I2) system is not beyond India's long-term potential. India later further translated its C4I2 system under the National Command Authority (NCA). The Indian NCA has the authority to operationalize the doctrine and the Indian civilian establishment is an oversight body on the NCA. On top of the NCA is the Cabinet Committee on Security (CCS) which is headed by the Indian Prime Minister along with the defence, finance, and external affairs minister (members). Under the NCA is the tri-service Strategic Forces Command (SFC – which is in charge of military command and control over the nuclear forces) which rests under the command of the Chief of Defence Staff. The role of the SFC is significant as it looks at the operational plans and maintains a credible strategic posture on a high degree of preparedness and alertness based on C4I2. How and why India converted its original IND of 2003 into a war-fighting mode is discussed in the subsequent chapters of this study.

Evolution of Pakistan's nuclear doctrine

Pakistan has not yet published its official nuclear doctrine till date. However, Pakistan's political announcements demonstrate some clear features of its doctrinal policy, which came out in response to the Indian document released by the National Security Advisory Board (NSAB) in 1999.[88] Based on its proactive approach, Pakistan defined its doctrine to address conventional asymmetry or strategic imbalance with India. Therefore, it is believed that Pakistan's nuclear policy is directed to address nuclear as well as conventional threats coming from India.

The major features of Pakistan's doctrine are highlighted below: (a) it initially announced a policy of CMD; (b) Pakistan relied on an FU policy considering its conventional asymmetry with India; (c) it vaguely announced a policy of Massive Retaliation and a reliable command, control, communication, computerization, and intelligence network (C4I); and (d) nuclear weapons were announced to be used as a last resort, especially when the survival of the state is at stake.

In the wake of the nuclear tests of 1998, Pakistan announced an NCA, the prime objective of which was to have oversight on nuclear development, employment, and C4I. The NCA is the apex decision-making institution that initiates policy and regulates and controls Pakistan's nuclear weapons capability including deployment and employment if deemed necessary. It has two committees, i.e., the Employment Control Committee (ECC) and Deployment Control Committee (DCC). The committees function separately for formulating employment and development strategies, respectively. The Strategic Plans Division (SPD) offers oversight to its routine tasks under the NCA, which deals with C4I of nuclear weapons and serves as the secretariat of the NCA. The features of Pakistan's doctrinal policy have been extracted and traced from various statements made by the top leadership on different occasions:[89] Then Prime Minister Sharif announced on 20 May 1999:

> While maintaining nuclear deterrence Pakistan is acutely conscious of the risks and responsibilities arising from the possession of nuclear weapons. We are adopting appropriate measures to put in place an effective command and control system. We are opposed to a nuclear arms race, and we are sensitive to international non-proliferation concerns … Nuclear restraint, stabilization, and minimum credible nuclear deterrence constitute the basic elements of Pakistan's nuclear policy.[90]

He further said, 'our strategic program is for national defence and deterrence [purposes]. We have not and will never pursue aggressive nuclear posturing or misadventure.'[91] At the same time, 'we will take all necessary measures to ensure the reliability and credibility of our minimum nuclear deterrence.'[92] Pakistan announced a minimum nuclear deterrence policy. For example, Premier Sharif highlighted, 'nuclear restraints stabilization and minimum credible deterrence constitute the basic elements of Pakistan's nuclear policy …'[93] Since Pakistan

was at a vulnerable stage in conventional deterrence, thus, it opted for nuclear FU policy to thwart Indian conventional as well as a nuclear threat.

It is interesting to note here that Pakistan's senior authorities also tried to quantify the minimum deterrence when Samar Mubarak Mund told the Dawn newspaper that 60–70 nuclear warheads would serve Pakistan's purpose to address the external threat from India.[94] Indeed, considering geographical proximity with India and its global aspirations and goals in view, Pakistan realized that a small number of arsenals would serve the purpose – depending on counterforce or counter-value targets. Since Pakistan is a smaller state, the orientation of its nuclear weapons program was defensive. A small number of weapons was not only cost-effective but a rational choice for Pakistan. Cheema rightly points out that 'numerical equilibrium of nuclear forces is not essential for minimum nuclear deterrence, but the credible capability to deliver unacceptable damage ensures deterrence.'[95] Moreover, concerning numerical competition, former President Musharraf confirmed, 'Pakistan does not want to direct its resources towards the race of weapons of mass destruction.'[96] Waltz's assertion appears to hold ground when he says that it is easy to handle a small number of arsenals and easy to institutionalize them in the context of a command and control system.[97] Therefore, Pakistan adopted a rational attitude because a small nuclear force and arsenal can demonstrate adequate deterrent capability against a much larger India. Thus, Pakistan started pondering credibility, survivability, and rationality as determinants of its deterrent capability.

Pakistan went further and clarified the term minimum highlighting that the level of existential threat and changing strategic environment in the prevailing circumstance will determine the number of its forces and size of arsenals. To maintain a high level of nuclear threshold, Pakistan also called for upgrading its conventional capability.[98] Pakistan believed that the nuclear forces could be relatively modest, which would provide grounded survivability.[99] Therefore, Pakistan's ambassador to the Conference on Disarmament (CD) promised 'restraint in weaponization.'[100]

Pakistani officials later indicated that they have adopted a massive retaliation[101] posture. President Musharraf stated during the 2001–2002 border stand-off, 'we do not want war. But if war is thrust upon us, we would respond with full might, and give a befitting reply.'[102] Presumably, Pakistan adopted the Massive Retaliation policy to enhance the credibility of its small arsenals. Nonetheless, Pakistan chose the strategy of 'Deliberate Ambiguity' in its FU policy. On the FU policy, Stephen P. Cohen calls it an option-enhancing policy.[103] Pakistan, from the outset, has not clarified its position on when and where this country would use nuclear weapons as an FU policy option. Hypothetically, '[t]o credibly threaten a first-use [nuclear or conventional], this posture must be largely transparent about capabilities, deployment patterns, and conditions of use.'[104] Nevertheless, Pakistan opted for deliberate ambiguity to maximize its deterrent value as is in the case of the U.S. or other nuclear weapon states.

Realists guide us here to understand that a status quo state (which is mainly concerned with the maximization of its security) will adopt FU policy if the adversary's conventional superiority is threatening its security (the pre-emption strategy). Hypothetically speaking, such states may adopt limited strike options. Schelling says that such actions will initiate limited wars, in which limited use of unconventional weapons occurred into a 'competition of risk-taking, characterized not so much by tests of force as by test of nerves.'[105] Pakistan's FU policy is guided by and based on Indian conventional superiority. It creates more pressure on a larger adversary and is a cost-effective option for a smaller state – Pakistan. Theoretically speaking, the FU is an aggressive doctrinal policy. For example, any kind of miscalculation and accident may encourage Pakistan towards prompt nuclear use. The introduction of low-yield weapons under the above policy framework has exposed new unavoidable accidental risks as discussed below.

Doctrinal transformation: Fighting a war to achieve victory?

The Kargil War and Twin Peaks Crisis validated that space existed to fight wars under the nuclear overhang. Thus, the Indian strategists went on to develop a new offensive, war-fighting military strategy to overcome the Indian shortcomings observed during *Operation Parakram*. The lessons learnt resulted in replacing Sundarji Doctrine with the Offensive CSD. Pakistan, in turn, transformed its posture from Massive Retaliation to a flexible response by introducing FSD and incorporating low-yield weapons in its weapon inventory. These developments led to reduce nuclear threshold and increase the probability of the use of nuclear weapons in a crisis.

Advancement of India's offensive CSD

India formally declared an adventurous CSD in 2004.[106] India devised this new offensive doctrine to conduct a limited conventional strike to inflict significant damage to Pakistani forces sharply so that there is no room left for the great powers such as the U.S. to intervene. India rationalized that the objective of the attack should be narrow enough that it eliminates any sort of justification on the part of Pakistani authorities to lead the clash towards spiral escalation.[107] The new war-fighting strategy was designed to counter Pakistan's alleged unconventional warfare strategy. Rajesh Basrur stated,[108]

> The CSD was developed in response to the asymmetric strategy adopted by Pakistan to pressurize India to negotiate on Kashmir. In a nuclear environment, India found it difficult to respond militarily to the Pakistani strategy as Indian conventional forces were too slow to mobilize, which was confirmed in 2001-02. Hence, India opted for CSD. Strictly speaking, this is no longer a term used by the Indian Army, which now focuses on Integrated Battle Groups that are designed for rapid and technology-driven action.

Nevertheless, the ambitious CSD called for increasing the offensive power of the *holding corps* and *strike corps*.[109] According to the *Sundarji Doctrine*, the *strike corps* consisted of three core components for conventional war, i.e., infantry division for control of territory, mechanized infantry for operational movement such as counter-penetrations, and tanks for counter-attack operations.[110] The *strike corps* were required to be closely supported and covered by sizeable artillery and airpower.[111] These three *strike corps* were deployed in Central India; for instance, Corps-I in Mathura, Corps-II in Ambala, and Corps-III in Bhopal, while the 'holding corps' was positioned near Pakistan's border.[112] Contrary to the previous doctrine, CSD comprises eight small division-sized IBGs, required to be positioned near Pakistan's border, marking a clear shift from a 'defensive-defence' to a 'defensive-offence' strategy. It is important to note that India pursued strategies such as *defence in depth* and *offensive-defensives strategy,* while Pakistan relied on a *defensive-offensive strategy* before the overt nuclearization of the region. This change in Indian strategy was devised to overcome operational drawbacks that were revealed in the military mobilization that ended up in a stalemate in 2002.[113] The conversion of large-sized strike corps into eight smart IBGs was required to assist in securing the objective of swift mobilization of troops and weaponry. The CSD is visualized as a tri-service offensive doctrine involving all parts of the Indian armed forces indicating a shift from a traditional defensive to an offensive posture.[114]

Jaspal's summarization[115] of CSD is beneficial to comprehend India's departure from defensive to offensive doctrinal posture: (1) all elements of the Indian armed forces would engage in continuous operations, day and night, until the military objectives are achieved. (2) The forward-deployed division-sized units would be altered and mobilized more quickly than larger formations to accomplish the requisite operational objectives. (3) Indian armed forces would deliver a catastrophic blow to Pakistan by employing bite-and-hold territory tactics, i.e., cutting the country into two or making slight territorial gains such as 50–80 kilometres deep, which could be used in post-conflict negotiations to extract concessions. (4) The Indian Army would require the capability to quickly amass ground and air firepower to deliver a surprising punishing blow to the Pakistan Army. (5) Rapid and swift operations would be launched to destroy counterforce targets, i.e., a knockout blow to the defensive corps of Pakistan. (6) A limited conventional surprise attack would conceal India's overall goals, which would not threaten Pakistan's destruction as a state. Consequently, Pakistan would be refrained from using a nuclear weapon as a last resort. Finally, the Indian Army would undertake offensive, pre-emptive operations short of nuclear war.

Ladwig argues that India perceives the newly devised doctrine much more advantageous than its predecessor due to five reasons.[116] (1) the proximity of division-sized IBGs and pivot corps to Pakistan's border assists in logistical supportability as well as manoeuvrability during the war to ensure unpredictability and surprise; (2) IBGs are programmed for a range

of operations to achieve respective objectives and even capture territory but cannot inflict a detrimental knockout blow, allowing no space to Pakistan for using justification to employ nuclear weapons; (3) the IBG's operation in eight areas in parallel can significantly exploit the decision-making process of Pakistani leadership in countering conventionally superior adversaries; (4) eight IBGs operating in various sectors will make it difficult for Pakistani intelligence to get the operational readiness status which will assist in creating a chance of surprise. The strategic goals in a limited war would be less predictable leading to confusion among Pakistani leadership in devising a strategy to counter, giving India a decisive superiority in the conflict. (5) If Pakistan employs strategic weapons against Indian troops, then, in that case, IBGs are much smaller in size than large-sized *strike corps* assisting the latter to avoid huge losses.

The most significant aspect of CSD is the velocity of actions in the troop's deployment and operations in the war. The operation would be quick enough that it would leave no space for the international community to intervene, as the IBGs might have reached Lahore before any sort of diplomatic engagement.[117] Historical evidence suggests that the U.S. played a vital role in the de-escalation of tensions between the two enduring rivals. The CSD, with all its perceived swift offensive strategy, puts a serious question mark on the possible role of the great powers in future conflicts to ensure strategic stability in the region. It is pertinent to mention that apart from the anticipated goals of ambitious CSD, the real challenge for India was the implementation of this doctrine. The continued violence in the Indian-administered Kashmir and elsewhere in India was a real test of the Indian leadership to execute their new adventurous war-fighting doctrine. In addition, the CSD was further challenged by Pakistan's induction of low-yield weapons and the announcement of its FSD.

Pakistan's low-yield weapons and FSD

As a result of the Indian crafting of the CSD, Pakistan searched for a re-balancing strategy to address India's aggression, brinkmanship, or punitive actions. Pakistan chose to include low-yield weapons in its inventory, presumably to 'enhance its defensive-offensive capability.'[118] This helped Pakistan to maintain its FSD[119] to counter Indian threats and offensive operations at all levels of the escalation ladder and to plug holes in its deterrence capability. It was confirmed when in April 2011, Pakistan test-fired the Hatf-IX – Nasr missile with a range of 60 kilometres, capable of carrying both conventional and nuclear warheads with high accuracy.[120] Pakistan has presumably achieved an operational-level capability to integrate these weapons systems into its centralized command and control system and to deploy them under the supervision of the NCA.[121] Pakistan announced that 'low-yield weapons provide an operational level capability to Pakistan's Strategic Forces, additional to the strategic and tactical level capability, which Pakistan already possesses.'[122]

Nevertheless, the significance of Pakistan's short-range, Nasr missile intends three reasons. (1) These systems can carry nuclear arsenals; (2) it is considered a perfect response to India's ambitious offensive strategy; (3) Pakistan believes that short-range weapons are suitable for 'Pouring cold water on [Indian] Cold Start.'[123] The strategic importance attributed by Pakistan to low-yield weapons indicates their possible use during the war with India.[124] The same very fact is much evident in the context of the Inter-Services Public Relations (ISPR) statement in which it was stated that the development of low-yield weapons addresses 'the need to deter the evolving threats.'[125] In synchronization with the same spirit, Kidwai maintained that the test was a very important milestone in consolidating Pakistan's strategic deterrence capability at all levels of the threat spectrum … the Nasr Weapon System now provides Pakistan with a short-range missile capability in addition to the already available medium and long-range ballistic missiles and cruise missiles in its inventory.[126]

In the aftermath of the development of low-yield weapons by Pakistan, Rodney Jones maintained that in case of any eventuality from India and further, lack of de-escalatory efforts from the international community, Pakistan will not be passive in defence but will rather react with escalatory, punitive manoeuvres of its own to avoid loss of political and territorial sovereignty and military defeat.[127] In broader terms, Pakistan holds on to the policy of FU to counter India's conventional military might.[128]

Although Pakistan has announced that these weapons will be used as a last resort. Thus, the last resort, FU policy and introduction of low-yield weapons build an additional strategic puzzle into Pakistan's doctrinal policy. What is the purpose of these battlefield weapons? Has Pakistan opted for the prompt use of non-conventional weapons? Has Pakistan opted for a delegative command system? Hypothetically speaking, under these scenarios, Pakistan has to place its weapons on high alert and under field commanders. When and how Pakistan will exactly use low-yield weapons is not sufficiently clear because Pakistan has not made any announcement on this under the notion of deliberate ambiguity. It seems that low-yield weapons have created more space for flexible response and counterforce targeting options. There are reservations at the global level that if Pakistan delegates these weapons to field commanders to use these low-range missiles during a crisis – this will create a risk of prompt employment.[129] Mark Fitzpatrick says, '[p]re-delegation can lead to unauthorized use.'[130] Monika Chaieves, 'no matter how carefully Pakistan has thought through its command and control structure, the delegation of authority to the field commanders creates [enormous] risks.'[131] Western scholars believe that the Nasr missile has lowered 'the threshold for nuclear use'[132] and 'introduction of battlefield-use nuclear weapons adds a destabilizing element.'[133] Whereas Pakistani officials and observers maintain that the introduction of low-yield weapons has increased the nuclear threshold and that Pakistan does not intend to pre-deploy or delegate these weapons to the field commanders.[134]

The argument holds that nuclear learning in Pakistan has rapidly enhanced, and the low-yield weapons have taken Pakistan's stress away in terms of Indian brinkmanship/punitive action and any kind of major aggression in the conventional realm. The opinion is sharply divided, even amongst Pakistani academicians that Pakistan may irrationally decide to use these weapons. This study argues that rationality relates to states' preferences. Sometimes, one state's rational act is an irrational act for the adversarial state. Thus, it is very hard to judge Pakistan's preferences under enormous pressure and during a war-like situation. It seems that Pakistan's strategy will be to make a highly calculated move during war-like situations. However, in response to any irrational or irresponsible Indian move, risks attached to low-yield weapons cannot be discounted.

India reportedly seems to employ Massive Retaliation in response to a nuclear attack (even low-yield), anywhere, within, or outside its territory at any level. Nevertheless, India's possession of the capability to institute a graduated response (laced with Prithvi, Dhanush and Prahaar) and counterforce, disarming strikes (discussed in Chapter 4) cannot be discounted. Chari confirms that introduction of the new technologies, such as low-yield weapons, demonstrates the 'insufficiency of India's NFU policy to deter Pakistan's destabilizing strategy.'[135] He says Pakistan could go to the extent of deploying its short-range missile. He further adds that according to the Indian doctrine, 'any level of nuclear attack will invite massive retaliation is too extreme to gain much credibility.'[136] Indeed, the Indian massive response to low-yield attacks raises a big question mark as Chari says that Tactical Nuclear Weapon (TNWs [low-yield]) have strained the regional deterrence stability.[137] He believes that Pakistan 'would also be enabled to counter any offensive operation India might contemplate against Pakistan in response to another Mumbai-style terrorist attack.'[138] Chari highlights a new spectrum of the threats between these two states, 'ranging from border incursion to sub-conventional warfare, cross border terrorism and militancy.'[139] He believes 'nuclear weapons provide no defence against these dangers.'[140]

Thus, the inclusion of nuclear technologies into the South Asian arsenals made peace more uneasy, thereby creating high risks of a nuclear exchange. However, the use of low-yield weapons on the battlefield from any side carries the potential to escalate the dynamics of conflict perilously – thus, leaving the high prospects of a nuclear exchange. An irrational and hasty decision to release TNWs/low-yield weapons, initiated at the lower level of command may trigger retaliation at a strategic level from the other side. It can be argued that low-yield weapons would only induce caution and result in a stalemate thereby allowing both sides' policy-makers to act rationally even during peace times. A state's irrational move at any level would escalate the tensions, thus increasing 'the prospect of a full-spectrum war, and, therefore, in a heightened state of tension and complexities of the South Asian region, it would be difficult, if not impossible, to reverse.'[141]

Pakistan's full-spectrum deterrence

Pakistan, in a compulsive manner, brought requisite doctrinal changes to mitigate the destabilizing development that emerged in the wake of India's ambitious CSD. Pakistan's NCA concluded on 5 September 2013 that it would keep adhering to the policy of CMD without indulging itself in an arms race with any other country. Nevertheless, Pakistan would not be incognizant vis-a-vis evolving security dynamics in South Asia and would keep an FSD to deter all sorts of aggression.[142] FSD comprises a smart battle-fighting strategy. Pakistan's NCA included nuclear weapons in the war plans of FSD. It was intended to acquire precise striking ability against India in case of any eventuality from the Indian side.[143] One of the senior Pakistani military officials stated,[144]

> Pakistan has always maintained its defensive capability to absorb and then beat back any offensive overture from the Indian side. It has been monitoring the development of various doctrines/strategies by its adversary with a keen focus and has developed its counter strategies through consistent operational thought processes. It is the superior operational thought of the Pakistan military that has forced Indians to come up with new doctrines and strategies now and then.

Kidwai proposed three main elements[145] of the FSD on 6 December 2017. Firstly, Pakistan is pursuing a spectrum of nuclear weapons in all three categories; tactical, operational, and strategic with full range coverage of the enormous Indian land mass and its outlaying territories that too includes the strategically important Islands of India such as Nicobar and Andaman. Secondly, Pakistan is developing proper weapons yield coverage and the numbers to contain the opponent's evident policy of Massive Retaliation. Lastly, Pakistan does want to experience the liberty of opting for a full spectrum of targets.[146]

Along with the development of modern war-fighting technologies concerning changing strategic situations, the armed forces of Pakistan responded to ambitious CSD by conducting military exercises to counter India's offensive designs. The military exercises are evident expressions of power and, in fact, assist in ensuring deterrence against the adversary.[147] In this regard, one of the major military exercises, namely, *Azm-e-Nau III* (New Resolve), was conducted in April 2010. Indeed, its strategic significance is much evident because *Azm-e-Nau III* was the first of its kind since *Zarb-e-Momin* (The Sword of Faithful) conducted in 1989.[148] The military exercise *Azm-e-Nau III* started from 10 April to 20 May 2010 and involved tri-services with more than 50,000 troops, inducting PAF's fighter jets and requisite equipment to create synchronization among the armed forces. The conduct of military exercises indicated Pakistan's sensitivity to India's CSD, which covered a large geographical area from Punjab to Sindh.[149] The significant aspects of the military

exercise were: (a) to harvest the technological advancements for intelligence gathering, surveillance, reconnaissance, and communication; (b) to repeal India's ambitious offensive posture in line with the CSD; (c) to launch a counter-attack against India to resist CSD deep hammer sledges; and (d) operational readiness, professionalism and a well-structured and well-equipped organizational structure that has the full capacity to fight one as well as two-front wars.[150] Thus, Pakistan intensively maximized efforts to increase its military preparedness and professionalism. Pakistan's then COAS, General Ashfaq Pervez Kayani declared the year 2008–2010 as 'the year of training,' and he announced that 'we are focused on the defence of Pakistan and fully capable to defend Pakistan today.'[151]

To counter the multi-dimensional threat in the context of changing situation in the region, PAF conducted a large-scale exercise *High Mark 2010* to check and further enhance its war-fighting capabilities. The PAF utilized information technology (IT) to test real-time inputs and outputs on all levels and also used indigenously developed JF-17 Thunder, the Airborne Early Warning and Control System (AEW&CS), the air-to-air refueller, use of advanced unmanned aerial vehicles (UAVs) and firepower demonstration to coup-up both offensive and defensive strategies.[152] Moreover, PAF used motorways for landing and take-off operations of its fighter jets to counter the challenge of security emergencies if or when CSD is implemented.[153]

The core objective of these military exercises was to counter the ambitious offensive plans of India as visualized in CSD, i.e., to penetrate deep into Pakistani territory. Additionally, this assisted in ensuring operational readiness to tackle security threats emanating from the western border along with Afghanistan. This is much evidence concerning the statement of the Chairman Joint Chief of Staff Committee (CJCSC), General Tariq Majid, in which he stated,[154]

> We have to be mindful of the blatant pursuit of military preponderance in our neighbourhood. Growing power imbalance due to the continuing buildup of the massive military machine, including both hi-tech conventional and nuclear forces, adoption of dangerous cold start doctrine and proactive strategy, and more assertive posturing especially after the very exceptional civil nuclear deal and notions of the two-front wars are all destabilizing trends, carrying implications for Pakistan's security. Therefore, retention of essential nuclear capability to maintain credible minimum deterrence against any possible aggression is our compulsion and not a matter of choice.

Some argue that Pakistan's armed forces' military endeavours are designed against India to launch counter-attacks.[155] Thus, Pakistan has a befitting response to any Indian aggression, whether it's at a tactical, operational, or strategic level. In a nutshell, Pakistan's defensive FSD put cold water on India's offensive CSD.

To sum up the debate, the advent of nuclear technologies led the two states into war-fighting counter strategies. The two states, instead of using deterrence as a tool to avert war, built reliance on offensive doctrines to fight and win wars. The two states' offensive doctrinal strategies and force modernization plans led to destabilizing nuclear deterrence while making peace precarious and war more likely.

Conclusion

This chapter was focused on assessing the conflict dynamics and war-fighting strategies in the aftermath of overt nuclearization covering events from 1998 to 2016. The empirical facts and analysis revealed the following concluding outcomes: one, the enduring nature of rivalry persisted between India and Pakistan even after the overt nuclearization. With the advent of nuclear technologies, the conflict transformation took place where major wars converted into limited and sub-conventional warfare, but peace remained fragile and precarious. The two states, due to fear of the use of nuclear weapons, tried to play under the nuclear overhang or by promoting proxies and insurgencies to achieve their objectives. Numerous crises emerged involving limited war reckoned as the Kargil conflict, the Twin Peaks Crisis, and the Mumbai crisis resulting in massive troop mobilization but the level of violence remained low/controllable. Importantly, both rival states adopted coercive strategies of compellence and deterrence in various crises. Pakistan used compellence strategy during the Kargil crisis to which India responded with deterrence by punishment strategy. While India used a compellence strategy involving a threat of the use of force during the Twin Peaks Crisis and the Mumbai Crisis to compel Pakistan to take concrete action against the terrorists to which Pakistan responded with deterrence by punishment and denial strategies. Nuclear deterrence ultimately refrained India from taking military actions, partly out of fear of uncontrollable escalation to the nuclear level. However, both states crafted doctrinal strategies against the notion of deterrence by building reliance on fighting not averting wars. India perceived Pakistan as supporting insurgency, which thought of countering through offensive CSD. Pakistan, in turn, acquired low-yield weapons and introduced FSD to rebalance its strategy with India. In this context, the U.S. played a role as a peace broker to de-escalate all the crises due to fear of the use of nuclear weapons. The U.S.' role as a crisis manager was also prominent due to its presence in the region in the backdrop of the war on terror. Thus the two states' heavy reliance on the U.S. involvement in the region led them into risky misadventures as they assumed that the U.S. would come to their rescue. Furthermore, a critical assessment of conflict dynamics and war-fighting strategies reveals that hostility and militarism remained a common practice after overt nuclearization. The advent of the new technologies significantly influenced conflict dynamics but didn't fully obstruct the peace process, it was resumed in one way or the other after

every reoccurring incident. Finally, to conclude, India-Pakistan war-fighting strategies became more complex, and we have witnessed an increased number of crises and decreased scale of violence.

Notes

1 See Brodie, *Absolute Weapons.*
2 Security Dilemma refers to the predicament that emerges between two states where any security initiative of state A is perceived as a threat by state B resultantly, it creates action-reaction syndrome between states A and B. See John Herz, 'Idealist Internationalism and the Security Dilemma,' *World Politics* 2, no. 2 (January 1950): pp. 157–180, https://doi.org/10.2307/2009187.
3 Michael Krepon, 'Looking Back: The 1998 Indian and Pakistani Nuclear Tests,' *Arms Control Association* 38, no. 4 (May 2008): pp. 51–55, https://www.proquest.com/openview/b55a1efa86a2b8141df64b21584f8ce9/1?pq-origsite=gscholar&cbl=37049.
4 Rajesh Kumar, 'Revisiting the Kashmir Insurgency, Kargil, and the Twin Peak Crisis: Was the Stability/Instability Paradox at Play?,' *The New England Journal of Political Science* 3, no. 1 (2008): pp. 49–97.
5 See Brodie, *Absolute Weapon*.
6 See Shelling, *Arms and Influence*.
7 Wohlstetter, 'Balance of Terror,' pp. 211–234.
8 Brodie, *Absolute Weapon,* 76.
9 Art, 'Assured Destruction,' p. 503.
10 Morgan, *Deterrence Now.*
11 Brodie, *Absolute Weapon.*
12 Waltz, 'More May Be Better,' p. 5.
13 Morgan, *Deterrence Now*, p. 8.
14 Raiesh Raiagopalan, *The Second Strike: Argument about Nuclear War in South Asia* (Delhi: Penguin Books India, 2005), p. 12.
15 Kenneth N. Waltz, *Theory of International Politics* (New York, N.Y.: Random House, 1979).
16 Peter R. Lavoy, Scott D. Sagan and James J. Wirtz (eds.) *Planning the Unthinkable* (New York, N.Y.: Cornell University, 2000).
17 Scott D. Sagan, 'The Origins of Military Doctrine and Command and Control Systems,' in *Planning the Unthinkable,* eds. Peter R. Lavoy, Scott D. Sagan and James J. Wirtz (New York, N.Y.: Cornell University Press, 2000), p. 23.
18 Mohandas Karamchand Gandhi is a renowned Indian political leader of the 20th Century who played a significant role in the Indian Independence Movement against the British Raj. He is famous for his non-violent philosophy; however, he was assassinated by Nathuram Godse, a member of a right-wing extremist Hindu political organization, Rashtriya Swayamsevak Sangh (RSS) and Hindu Mahasabha. Jawaharlal Nehru is one of the prominent leaders of the Indian Independence Movement. He became the first Prime Minister of India who exerted a significant influence on the domestic politics as well as foreign policy of India in the early decades of independence, generally reckoned as Nehruvian era.
19 For more details on Nehruvian strategic thinking, see Zafar Iqbal Cheema, *Indian Nuclear Deterrence: Its Evolution, Development, and Implications for South Asian Security* (Karachi: Oxford University Press, 2010), p. 498.
20 Ibid.
21 More detail on this perspective is deployed in the later part of this study.

22 Amjad Abbas Maggsi, 'Lahore Declaration February 1999: A Major Initiative for Peace in South Asia,' *Pakistan Vision* 14, no. 1 (2013): p. 184.
23 Robert Wirsing, *India and Pakistan and the Kashmir Dispute: On Regional Conflicts and Its Resolutions* (New York, N.Y.: St Martin's Press, 1998).
24 The conflict began in 1984 with India's successful Operation Meghdoot during which it gained control of the Siachen Glacier (an unoccupied and not demarcated area). India has established control over all of the 70 kilometres (43 miles) long Siachen Glacier and all of its tributary glaciers, as well as the three main passes of the Saltoro Ridge immediately west of the glacier – Sia La, Bilafond La and Gyong La. Pakistan controls the glacial valleys immediately west of Saltoro Ridge.
25 S. Paul Kapur, 'Ten Years of Instability in a Nuclear South Asia,' *International Security* 33, no. 2 (Fall 2008): p. 73, https://www.jstor.org/stable/40207132.
26 Prasun K. Sengupta, 'Mountain Warfare: The Kargil Experience,' *Asian Defense Journal* 10 (October 1999): pp. 42–46.
27 LoC is a military control line between the Indian and Pakistani-controlled parts of Jammu and Kashmir – a line that does not constitute a legally recognized international boundary but serves as the de facto border.
28 Navina Behera, *Demystifying Kashmir* (Washington, D.C.: Brooking Institute, 2006), p. 84.
29 J. N. Dixit, *India-Pakistan in War and Peace* (London: Routledge, 2002), p. 33.
30 Tahir Amin, 'Kargil Crisis in Kashmir,' *Cambridge Review of International Affairs 13*, no. 2 (2007): p. 322, https://doi.org/10.1080/09557570008400318.
31 Sumita Kuma, 'Trends in Indo-Pakistan Relations,' *Strategic Analysis* 24, no. 2 (2000): pp. 234–235, http://dx.doi.org/10.1080/09700160008455210; and V.S. Mani, 'Kargil Conflict International Law Perspective,' *Himalayan and Central Asian Studies* 3, no. 3/4 (July–December 1999): p. 76.
32 Amin, 'Kargil Crisis,' p. 322.
33 Sumit Ganguly, 'Nuclear Stability in South Asia,' *International Security* 33, no. 2 (Fall, 2008): p. 57, https://www.jstor.org/stable/40207131; and Robert G. Wirsing, *Kashmir in the Shadow of War: Regional Rivalries in the Nuclear Age* (New York, N.Y.: M.E. Sharpe, 2003), p. 36.
34 Nasim Zehra, *From Kargil to the Coup: Events That Shook Pakistan* (Lahore: Sang-e, Meel Publisher, 2018), pp. 337–338.
35 See 'World South Asia: India Loses Two Jets,' *BBC,* May 27, 1999, http://news.bbc.co.uk/2/hi/south_asia/354120.stm.
36 Amin, 'Kargil Crisis,' pp. 323–324.
37 Sumit Ganguly and S. Paul Kapur (eds.) *Nuclear Proliferation in South Asia: Crisis Behavior and the Bomb* (New York, N.Y.: Routledge, 2009), p. 156.
38 Ashley J. Tellis, C. Christine Fair, and Jamison Jo Medby, *Limited Conflicts under the Nuclear Umbrella: Indian and Pakistani Lessons from the Kargil Crisis* (Santa Monica, C.A.: RAND Corporation, 2001), p. 10.
39 See 'Clinton-Sharif Joint Statement on July 4, 1999,' https://www.govinfo.gov/content/pkg/WCPD-1999-07-12/pdf/WCPD-1999-07-12-Pg1278.pdf.
40 Arpit Rajain, *Nuclear Deterrence in Southern Asia, China, India, and Pakistan* (New Delhi: SAGE Publications, 2005), pp. 51–52.
41 Verghese Koithara, *Crafting Peace in Kashmir: Through a Realist Lens* (New York, N.Y.: SAGE Publications, 2004), p. 45.
42 Abdul Sattar, *Pakistan's Foreign Policy 1947–2005* (Karachi: Oxford University Press, 2006), p. 269.
43 Zulfqar Khan and Rizwana Abbasi, 'Regional-Centric Deterrence: Reassessing Its Efficacy for South Asia,' *Korean Journal of Defence Analysis* 25, no. 4 (2013): p. 492.

44 Polly Nayak and Michael Krepon, 'US Crisis Management in South Asia's Twin Peaks Crisis,' in *US Crisis Management in South Asia's Twin Peak Crisis Report 57*, eds. Polly Nayak and Michael Krepon (Washington, D.C.: Stimson Center, 2014), p. 16.
45 Walter C. Ladwig III, 'A Cold Start for Hot Waters? The Indian Army's New Limited War Doctrine,' *International Security* 32, no. 3 (Winter 2007/08): p. 161. https://doi.org/10.1162/isec.2008.32.3.158.
46 Kapur, 'Ten Years of Instability,' p. 80.
47 Rahul Roy Chaudhury, 'Nuclear Doctrine, Declaratory Policy, and Escalation Control,' *Stimson Center*, April 28, 2004, https://www.stimson.org/2004/nuclear-doctrine-declaratory-policy-and-escalation-control/.
48 Prakash Menon, *The Strategy Trap: India and Pakistan under Nuclear Shadow* (New Delhi: Wisdom Tree, 2018), pp. 112–123.
49 One of the authors' interviews with Christopher Clary, Assistant Professor of Political Science in University at Albany, June 14, 2022.
50 For a further detailed analysis of this crisis, see Nayak and Krepon, 'US Crisis Management.'
51 Timothy W. Crawford, *Pivotal Deterrence, Third-Party Statecraft and the Pursuit of Peace* (London: Cornell University Press, 2003), p. 12.
52 Iftikhar H. Malik, 'The Afghanistan Crisis and the Rediscovery of the Frontline State,' *Asian Survey* 42, no. 1 (2002): p. 210, https://www.jstor.org/stable/10.1525/as.2002.42.1.204.
53 Jawed Naqvi, 'India Soften Tone After Powell's Visit: Jaswant Want Action on Terrorists' List,' *DAWN*, January 19, 2002, https://www.dawn.com/news/15713/india-softens-tone-after-powell-s-visit-jaswant-wants-action-on-terrorists-list.
54 Rajesh Basrur, 'India's Pakistan Problem: Operation Parakram Revisited,' *India Review* 18, no. 5 (2019): p. 503, https://doi.org/10.1080/14736489.2019.1703362.
55 V. K. Sood and Pravin Sawhney, *Operation Parakram: The War Unfinished* (New Delhi: SAGE, 2003), p. 73.
56 Saira Khan, 'Nuclear Weapons and the Prolongation of the India-Pakistan Rivalry,' in *The India-Pakistan Conflict: An Enduring Rivalry,* ed. T. V. Paul (Cambridge: Cambridge University Press, 2005), p. 175.
57 Pervaiz Iqbal Cheema, 'The Kashmir Dispute: Key to South Asian Peace,' *Islamabad Policy Research Institute Journal* XIV, no. 1 (Winter 2014): pp. 6–7.
58 As per the United Nations Resolution 1948, a plebiscite will allow the people of Kashmir to decide whether they want to live in India or Pakistan or become an independent state.
59 See 'Musharraf Solution to Kashmir Issue,' *History Pak.Com*, https://historypak.com/musharraf-solution-kashmir-issue/.
60 Suhasini Haider, 'Claiming the Four-Step Formula,' *The Hindu*, May 15, 2014, https://www.thehindu.com/opinion/lead/Claiming-the-four-step-formula/article11634935.ece.
61 See Press Release, Ministry of External Affairs, Government of India, March 08, 2006, https://www.mea.gov.in/pressreleases.htm?dtl/4883/goi+conveys+to+pakistan+its+protest+against+proposed+construction+of+bhasha+dam+and+appreciation+for+humanitarian+gesture+shown+by+a+pakistani+ship+to+an+indian+ship.
62 Saeed Ahmed Rid, 'Is the India-Pakistan Conflict Intractable?,' *E-International Relations,* March 1, 2016, https://www.e-ir.info/2016/03/01/is-the-india-pakistan-conflict-really-intractable/.
63 Rizwana Abbasi and Zafar Khan, *Nuclear Deterrence in South Asia: New Technologies and Challenges to Sustainable Peace* (London: Routledge, 2019), p. 126.

64 Polly Nayak and Michael Krepon, *The Unfinished Crisis: US Crisis Management after the 2008 Mumbai Attacks* (Washington, D.C.: Stimson Centre, February 2012), p. 20.
65 See 'The Death Toll Climbs Past 150 as City Reels from Terror Attack,' *The Guardian*, November 29, 2008, https://www.theguardian.com/world/2008/nov/29/mumbai-terror-attacks-terrorism2.
66 Zeeshan Haider, 'Pakistan Cautions India against "Non-state Actors",' *Reuters,* December 27, 2008, https://www.reuters.com/article/uk-india-pakistan-idUKTRE4BQ0P320081227.
67 Nirupama Subramanian, 'McCain Warns Pakistan of Indian Air Strikes,' *The Hindu,* December 7, 2008, https://web.archive.org/web/20081207224014/http://www.hindu.com/2008/12/07/stories/2008120757500100.htm.
68 Adil Sultan, 'India-Pakistan Crises and the Evolving Dyadic Deterrence Model,' *Islamabad Policy Research Institute Journal* XX, no. 1 (2020): p. 30.
69 Bruce Riedel, 'The Mumbai Massacre and Its Implication for America and South Asia,' *Journal of International Affairs* 63, no. 1 (2009): p. 111, https://www.jstor.org/stable/24384175.
70 Meenakshi Sood, 'Pakistan's (Non-Nuclear) Plan to Counter "Cold Start",' *The Diplomats*, March 25, 2017, https://thediplomat.com/2017/03/pakistans-non-nuclear-plan-to-counter-cold-start/.
71 Muhammad Zeeshan Ali, *Strategic Delusions – The Cold Start Doctrine: Proactive Strategy,* (Fort Leavenworth, K.S.: United States Army Command and General Staff College, 2016), p. 20.
72 See Rizwana Abbasi, 'A Strategic Shift in Indo-Pak Nuclear Strategy: Implications for Regional Stability,' *Islamabad Policy Research Institute Journal* XV, no. 2 (Summer 2015): p. 6; and also see 'India's Draft Nuclear Doctrine,' *Arms Control Association,* https://www.armscontrol.org/act/1999-07/indias-draft-nuclear-doctrine.
73 See 'Draft Report of Nation Security Advisory Board on Indian Nuclear Doctrine,' https://mea.gov.in/in-focus-article.htm?18916/Draft+Report+of+National+Security+Advisory+Board+on+Indian+Nuclear+Doctrine.
74 Ibid (para 2.3 and 2.4).
75 Ibid (para 2.4).
76 Ibid (para 2.4 and 2.5).
77 Ibid (para 2.6a).
78 Ibid (para 3.2).
79 See 'Lok Sabha Debates, Made a Statement on Bilateral Talks with the United States of America on 15 December 1998,' https://indiankanoon.org/doc/862641/?type=print.
80 See para 2.6 of the Indian DND.
81 See 'Para 2.II The Cabinet Committee on Security Reviews Operationalization of India's Nuclear Doctrine,' *Ministry of External Affairs, Government of India*, January 4, 2003, https://mea.gov.in/pressreleases.htm?dtl/20131/The_Cabinet_Committee_on_Security_Reviews_perationalization_of_Indias_Nuclear_Doctrine+Report+of+National+Security+Advisory+Board+on+Indian+Nuclear+Doctrine.
82 Ibid para 2. IV.
83 P. R. Chari, 'India's Nuclear Doctrine: Stirring of Change,' *Carnegie Endowment for International Peace*, https://carnegieendowment.org/2014/06/04/india-s-nuclear-doctrine-stirrings-of-change-pub-55789.
84 Asley J. Tellis, *India's, Emerging Nuclear Posture: Between Recessed Deterrence and Ready Arsenals* (Santa Monica, C.A.: RAND Corporation, 2001), p. 367.

85 Vipin Narang, 'Five Myths about India's Nuclear Posture,' *The Washington Quarterly* 36, no. 3 (Summer 2013): p. 148, https://doi.org/10.1080/0163660X.2013.825555.
86 See para 2.4, 'India's Nuclear Doctrine.'
87 See 'Para 5.3, Draft Report of Nation Security Advisory Board on Indian Nuclear Doctrine.'
88 Michael Krepon, 'Pakistan's Nuclear Strategy and Deterrence Stability,' in *Deterrence Stability: Escalation Control in South Asia*, eds. Michael Krepon and Julia Thomson (Washington, D.C.: Stimson, 2013), pp. 41–64.
89 Agha Shahi, Zulfiqar Ali Khan, and Abdul Sattar, 'Securing Nuclear Peace,' *News International*, October 5, 1990.
90 See 'Remarks of the Prime Minister of Pakistan, Nawaz Sharif on Nuclear Policies and the CTBT, National Defence College, Islamabad,' May 20, 1999.
91 See 'Opening Remarks by the Prime Minister at the National Command Authority,' July 14, 2011.
92 Ibid.
93 See 'Remarks of Prime Minister Nawaz Sharif on – Nuclear Policies and the CTBT,' *National Defense University, Islamabad*, May 20, 1999.
94 Quoted in Bhumitra Chakma, 'Pakistan's Nuclear Doctrine and Command and Control System: Dilemma of Small Nuclear Forces in Second Atomic Age,' *Security Challenges* 2, no. 2 (July 2006): p. 122, https://www.jstor.org/stable/26459035.
95 Cheema, *Indian Nuclear Deterrence,* p. 526.
96 Faraz Hashmi, 'Nuclear Deterrence Vital to Security,' *DAWN,* June 26, 2001.
97 Sagan and Waltz, *The Spread of Nuclear Weapons.*
98 Rajesh Rajagopalan, *The Second Strike: Arguments about Nuclear War in South Asia* (New Delhi: Penguin Viking, 2005), p. 49.
99 Ibid.
100 See 'Statement by Ambassador Munir Akram in the Plenary Meeting of the Conference on Disarmament on Thursday, 30 July 1998,' http://www.acronym.org.uk/old/archive/spplen.htm.
101 Quoted in Chakma, *Pakistan's Nuclear Doctrine*, p. 124.
102 Howard W. French, 'Pakistan Vows Its "Full Might" if a War Comes,' *The New York Times*, May 28, 2002, https://www.nytimes.com/2002/05/28/world/pakistan-vows-its-full-might-if-a-war-comes.html.
103 Quoted in Mohd. Aminul Karim, 'Is Nuclear Deterrence Workable at the Brink Time in South Asia and Beyond?,' *The Korean Journal of Defense Analysis* 26, no. 1 (March 2014): p. 38.
104 Vipin Narang, 'Posturing for Peace: Pakistan's Nuclear Posture and South Asian Stability,' *International Security* 34, no. 3 (Winter 2009/10): p. 44, https://doi.org/10.1162/isec.2010.34.3.38.
105 Schelling, *Arms, and Influence*, p. 94.
106 Firdaus Ahmed, 'The Day after Cold Start,' *Institute of Peace and Conflict Studies*, Military Article, No. 2424, November 23, 2007.
107 Ladwig III, 'A Cold Start for Hot Waters?,' p. 164.
108 One of the authors' interviews with Professor Rajesh Basrur, Senior Fellow in the South Asia Program at the S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University, Singapore, June 10, 2022.
109 Zafar Khan, 'Cold Start Doctrine: The Conventional Challenge to South Asian Stability,' *Contemporary Security Policy* 33, no. 3 (2012): p. 579, https://doi.org/10.1080/13523260.2012.727685.
110 V. R. Ragavan, 'Limited War and Nuclear Escalation in South Asia,' *The Non-Proliferation Review* 8, no. 3 (Fall/ Winter 2001): p. 89, http://dx.doi.org/10.1080/10736700108436865.

111 Ibid; and Sood and Sawhney, *Operation Parakram*, p. 81.
112 Ludwig III, 'A Cold Start for Hot Wars?,' p. 160.
113 Khan, 'Cold Start Doctrine,' p. 579.
114 Ludwig III, 'A Cold Start for Hot Wars?,' pp. 8–158.
115 Zafar Nawaz Jaspal, *India's 'Surgical Strike' Stratagem Brinkmanship and Response* (Islamabad: Khursheed Printers (Pvt) Ltd, 2019), pp. 57–58.
116 Ladwig III, 'A Cold Start for Hot Wars?,' pp. 166–167.
117 John H. Gill, 'India and Pakistan: A Shift in the Military Calculus?,' in *Strategic Asia, 2005–06: Military Modernization in an Era of Uncertainty*, eds. Ashley J. Tellis and Michael Wills (Seattle, W.A.: National Bureau of Asian Research, 2005), p. 253; and Peters et al., *War and Escalation in South Asia* (Santa Monica, C.A.: RAND Corporation, 2006), p. 30.
118 Khan and Abbasi, 'Regional-Centric Deterrence,' pp. 496–497.
119 Sannia Abdullah, 'Pakistan's Full-Spectrum Deterrence: Trends and Trajectories,' *South Asian Voices,* December 13, 2018, https://southasianvoices.org/pakistan-full-spectrum-deterrence-trends-trajectories/.
120 See 'Pakistan Test Fires Nuclear-Capable Missile,' *DAWN*, February 11, 2013, https://www.dawn.com/news/785266/pakistan-conducts-successful-test-of-.
121 Khan and Abbasi, 'Regional-Centric Deterrence,' pp. 495–497.
122 See 'Inter-Services Public Relations, Press Release No. PR34/2012-ISPR,' March 5, 2012, https://ispr.gov.pk/press-release-detail.php?id=1979.
123 The author has heard this occasionally during interactive sessions and round-table discussions held in Pakistan.
124 Zafar Nawaz Jaspal, 'Tactical Nuclear Weapons and Strategic Stability in South Asia,' *Weekly Pulse*, September 23, 2011.
125 See 'Inter-Services Public Relations Press Release No. PR94/2011-ISPR,' April 19, 2011, https://www.ispr.gov.pk/press-release-detail.php?id=1721.
126 Quoted in Saania Abdullah, 'Cold Start in Strategic Calculus,' *Islamabad Policy Research Institute Journal* XII, no. 1, (2012): p. 23.
127 Rodney W. Jones, 'Nuclear Stability and Escalation Control in South Asia: Structural Factors,' in *Escalation Control and the Nuclear Option in South Asia,* eds. Michael Krepon, Rodney W. Jones, and Ziad Haider (Stanford, C.A.: Stanford University Press, 2004).
128 Feroz Hassan Khan, 'Minimum Deterrence: Pakistan's Dilemma,' *RUSI Journal* 156, no. 5 (October/November 2011): p. 46, https://doi.org/10.1080/03071847.2011.626274.
129 Mansoor Ahmed, 'Pakistan's Tactical Nuclear Weapons and Their Impact on Stability,' *Carnegie Endowment for International Peace,* June 30, 2016, https://carnegieendowment.org/2016/06/30/pakistan-s-tactical-nuclear-weapons-and-their-impact-on-stability-pub-63911.
130 Mark Fitzpatrick, 'Terrorism Isn't Pakistan's Gravest Nuclear Danger,' *Express Tribune*, May 7, 2014, https://tribune.com.pk/story/704927/terrorism-isnt-pakistans-gravest-nuclear-danger.
131 Monika Chansoria, 'Pakistan's Tactical Nukes Threaten Stability in South Asia,' *Foreign Policy*, May 5, 2014, https://foreignpolicy.com/2014/05/05/pakistans-tactical-nukes-threaten-stability-in-south-asia/.
132 Ibid.
133 Ibid.
134 One of the author's interaction with the relevant officials based in Islamabad.
135 P. R. Chari, 'India's Nuclear Doctrine: Stirrings of Change,' *Carnegie Endowment for International Peace,* June 4, 2014, https://carnegieendowment.org/2014/06/04/india-s-nuclear-doctrine-stirrings-of-change.
136 Ibid.

137 Ibid.
138 Ibid.
139 Ibid.
140 Ibid.
141 See Khan and Abbasi, 'Regional-Centric Deterrence.'
142 See Inter-Services Public Relations Pakistan Press Release, No PR-133/2013-ISPR, September 5, 2013, https://www.ispr.gov.pk/press-release-detail.php?id=2361.
143 Abdullah, 'Pakistan's Full-Spectrum Deterrence.'
144 One of the author's interview with Brig. (Retd.) Javed Hassan Hashmi SI (M) served on various Command and Staff appointments in the army on June 05, 2022.
145 The Newspaper's Staff Reporter, 'Rare Light Shone on Full Spectrum Deterrence Policy,' *DAWN*, December 7, 2017, https://www.dawn.com/news/1375079.
146 Ibid., also see Abdullah 'Pakistan's Full-Spectrum Deterrence.'
147 Zafar Khan, *Pakistan's Nuclear Policy: A Minimum Credible Deterrence* (London: Routledge, 2015), p. 78.
148 See 'Army, PAF Start Azm-e-Nau War Games,' *Defence PK*, July 14, 2009.
149 Jaspal, *'Surgical Strike*,' p. 173.
150 Subhash Kapila, 'Pakistan's Army Politico-Military Signals to India Through Azm-e-Nau,' *South Asian Analysis*, April 21, 2010.
151 Iftikhar A. Khan, 'Army Plans Largest Exercise since 98 Zarb-i-Momin,' *DAWN*, April 6, 2010, https://www.dawn.com/news/529108/army-plans-largest-exercise-since-ae98-zarb-i-momin.
152 S. M. Hali, 'PAFs Exercise High Mark 2010,' *The Nation*, March 17, 2010.
153 Abdullah, 'Cold Start in Strategic Calculus,'; and Lubna Umar, 'Azm-e-Nau and Renewed Security Trends,' *Pakistan Observer*, April 9, 2010.
154 See Inter-Services Public Relations Press Release No. PR-235/2010-ISPR, June 17, 2010, https://ispr.gov.pk/press-release-detail.php?id=1333.
155 See Gurmeet Kanwal, Indian Army Vision 2010 (New Delhi: Harper Collins, 2008).

2 Nuclear Force Modernization and Weapon Asymmetry

Introduction

Power imbalance and weapon asymmetry have continuously increased while deterrence stability has decreased in South Asia since the advent of nuclear weapons. That said, the dawn of this Century brought renewed security challenges for this region against the backdrop of the global power shift. China's rising stature through its Belt and Road Initiative (BRI) has somewhat challenged the U.S.-established hegemony in Asia in particular and the western-centric world order in general. This global power shift has introduced a great power rivalry between the U.S. and China. The U.S. aims to resist China's rise while regulating the Asian order from a distance thereby safeguarding its political, economic and military interests there. Thus, the U.S. has redefined its alliance system with many states including India against China in Asia.[1] India in turn is using this opportunity to project its power within and beyond the region to create a footprint in the global market to buy sensitive hi-tech systems and technologies to boost its wealth and power.[2]

The competing strategies between China and India, and India's hedge against China continue to intensify. The Indian perspective on regional strategic stability is shaped by China being perceived as the primary external threat that defines India's nuclear posture.[3] The threat from China helps India to project China as a primary factor behind its nuclear force modernization. Contrarily, India does not feature prominently in China's strategic calculus because Chinese decision-makers and analysts remain dismissive about the relevance of nuclear weapons in the India-China dyad, as also manifested during the recent Galwan crisis.[4] India plays a hedge against China which in turn increases its reliance on force modernization and induction of new technologies. However, New Delhi's building up of nuclear arsenal under this pretext threatens the already fragile strategic stability vis-à-vis Pakistan. Despite the oft-cited Chinese threat, Pakistan remains the primary object of India's changing strategic thinking and evolving nuclear postures, as discussed in the subsequent sections. More so, India's dismissive behaviour towards arms control and its expanding nuclear and conventional capabilities, along with aggressive strategic thinking, lead to arms

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control instability in the region. These dynamics merit a focused assessment of South Asian strategic stability to study how in parallel to conflict dynamics (as discussed in the preceding chapter), an asymmetry that has evolved since 1998 and evolving security environment in the backdrop of the U.S.-China competition has led to undermining regional deterrence stability.

India's great power ambitions

The major factor attributed to India's offensive strategy is its long-desired goal to achieve hegemonic status in the region. The desire to achieve a great power state status based on its expansionist designs remained at the centre of India's foreign policy since independence in 1947. India used various approaches inwardly and outwardly to gain great power state status in the region and on the global stage. For example, various offensive military campaigns launched by India to annex princely states, such as Kashmir and Junagadh in 1947, Hyderabad in 1948 and Goa in 1961[5] to gain territorial expansion are glaring examples.[6] On the international front, India used a non-alignment policy[7] to project itself as a neutral player in global affairs during the Cold War between the U.S. and the Soviet Union (now Russia). Interestingly, India closely aligned itself with the great powers whenever it was necessary to maximize its desired strategic objectives. In this regard, the friendship treaty between the Soviet Union and India during the India-Pakistan war in 1971 is a case in point.[8] India with the assistance of the Soviet Union implemented its offensive strategy against Pakistan. Indo-Soviet friendship treaty is considered to be a quick explicit exit from its non-alignment policy.[9] India signed the strategic treaty in August 1971 to enjoy a free hand in undertaking a military offensive in East Pakistan.[10] India covertly supported the Bengali rebellion group reckoned as *Mukti Bahini* involved in fighting Pakistan's armed forces.[11] Subsequently, India went into fighting a full fledge war with Pakistan. India's support to the insurgency in East Pakistan dissected Pakistan into two halves, ultimately leading to the creation of Bangladesh.[12] Thus, India based on its offensive approach symbolically established itself as a hegemon in the South Asian region. Nevertheless, India's hegemonic policies were not specific to Pakistan only but also other states in the region confronted India's offensive designs at different points in history. For example, India's regional security approach based on the *Sundarji doctrine* and *Indira doctrine* was a clear signal to the regional and extra-regional powers to accept its role as the sole great power in the South Asian region.[13] For instance, India asserted its great power status and hegemony on neighbouring small states such as Sri Lanka,[14] Maldives[15] and Nepal[16] in the 1980s.

Historically, India had conflictual relations with China. India's differences with China go back to the India-China war of 1962. Both distinctly claim the two disputed territories, i.e., China controls Aksai Chin while India controls Arunachal Pradesh. Beijing claims the northeast Indian state of Arunachal Pradesh while India does not recognize Beijing's jurisdiction over Aksai Chin

located in Southwest China. Both states also have a dispute on the part of Kashmir as Pakistan recognized Chinese sovereignty over the land in the northern areas of Kashmir and Ladakh through an agreement made in 1963.[17] That said, China-India territorial rivalries remained on a downward trajectory for quite some time; however, their difference is regaining momentum in the backdrop of evolving security environment in the broader Asia-pacific region.[18] Both states lately got trapped in a military standoff in 2017[19] and again in 2020[20] endangering the peace and stability of the region.

In recent years, India under its Act East policy[21] has undertaken various initiatives to enhance its commitments related to trade and development with the countries located in Asia. Also, it took an active role in regional organizations such as the Association of Southeast Asian Nations (ASEAN). India is thus expanding its influence in Asia which is suggestive of the view that India's strategic ambitions go beyond the Indian Ocean Region (IOR). Such expansion could lead New Delhi to threaten Beijing's interests in the region including the South and East China Seas. For example, China's BRI and its growing influence in South Asia have intensified its tensions with India, as the latter considers the South Asian region under its strategic sphere of pre-eminence. As Pakistan decided to seize the economic opportunity offered to it by the China-Pakistan Economic Corridor (CPEC), which is the fulcrum of China's BRI, India becomes uncomfortable due to China's likely outreach to the Arabian Sea. In the security domain, based on its quest to become a regional hegemon, a major concern for India is to outweigh China's growing influence in the maritime domain while China heavily relies on the Arabian Sea, IOR and the archipelago areas of Indonesia for its trade and energy resources.[22] India identifies 'the arc from the Persian Gulf to the Strait of Malacca as its legitimate area of interests,' and further, the area in the Red Sea, the South China Sea and the Southern Indian Ocean as additional areas of maritime interests.[23] Arguably, on the one hand, India hedges against China while on the other hand, it is busy uplifting its wealth and power.

That said, the U.S. is a major player in the India-China equation. It is because of the reason that the U.S. is a settled maritime power[24] and is a major stakeholder in the Asian region. The U.S. believes that India can act as a 'net security provider'[25] and play a 'stabilizing role in Asia.'[26] Thus, the U.S. has initiated a renewed partnership with India to promote its strategic, political and economic interests in the Asia-pacific region and beyond. The U.S. understanding of New Delhi's role was reaffirmed through Obama's Pivot to Asia Policy.[27] India is considered a natural ally as the U.S. believes that its growing and deepening friendship with India offers benefits to all world citizens.[28] China's increasing and assertive role in the region compelled the U.S. and India towards forging a deeper relationship with each other. In this effort, President Barack Obama took forward the agreements that were initiated by G. W. Bush's administration thereby renewing military cooperation based on a transformed security framework in the Indo-U.S. strategic partnership.

It is interesting to understand that the U.S. quietly endorsed India's security-centric approach in the region.[29] This U.S. policy of acceptance towards India's desire to achieve great power state status can be linked to contemporary times where cordial Indo-U.S. relations are not only existing but also hugely impacting the geopolitics of the broader Asia-pacific region in general and South Asia in particular. The U.S. has extended all-out assistance to India in modernizing technologies and improving its economic growth.[30] The military competition among the great powers either results in states' choosing the strategy of buck-passing or overbalancing.[31] The U.S. in this case passed the buck to India to contain China. For said purpose, the U.S. supported India militarily as well as economically in its makeover to gain great power state status.

Due to its fragile economic base, meagre military capabilities and lack of western political support, India, in the beginning, projected a defensive military posture to offset global pressure. In recent years, India's integration into the international community specifically, its strategic partnership with the U.S. has assisted India to realize its long-awaited dreams. India's fast-growing economy and ever-increasing military muscles indicate its aspiration to gain a great power status in the global affairs.[32] Offensive realism proposes that a state with an increased power balance hunts for the maximization of its political influence, economic outreach, territorial control and dominance over others.[33] India's significant advances in the economic and military sphere in recent times are reflective of offensive realism.

In current times, India's tri-forces have more than one million men, holding nuclear weapons and sufficient delivery systems.[34] Thus, India is on its way to acquiring the requisite capabilities to gain a great power state status.[35] India underwent technological modernization in a nuclearized environment to develop and subsequently, implement its offensive strategies to maximize its influence in the region and beyond. The U.S. assistance to India puts the latter on the fast track of modernizing its conventional and strategic capabilities. According to Stockholm International Peace Research Institute (SIPRI), India remained the top weapons importer with 9.7 percent and 13 percent of the total global weapons procurement in the two time periods such as from 2007 to 2011 and from 2012 to 2016, respectively. SIPRI indicated that the Indian military budget is ranked third after the U.S. and China with total spending of 71 billion dollars in the world in the year 2019. Thus, India's military spending has increased by 259 percent since 1990 and by 37 percent during the last ten years.[36] Additionally, India has announced a plan to modernize its armed forces by spending worth 250 billion dollars.[37] Thus, Indo-U.S. strategic partnership has augmented India's economic wealth and military capabilities resulting in aggravated asymmetry between India and Pakistan.

India based on its doctrinal changes and ever-increasing military capabilities desired to gain hegemonic status and strategic dominance in the South Asian region. With U.S. assistance, India intends to get on the road to accumulating offensive power to such an extent that could assist it in launching

lightning campaigns and (compellence strategy) to punish Pakistan without crossing the nuclear threshold.[38] The systemic opportunities assisted India in military modernization and its corresponding compellence strategy that encouraged India to go for punitive measures against Pakistan.[39] Further analysis suggests that Indian hegemonic designs, its rising power state status and force modernization has increased not decreased weapon asymmetry that in turn impacts conflict dynamics in a manner where major wars converted into limited wars to achieve objectives by reducing the scale of violence and affecting the deterrence stability. The sections below asses the accumulation of the existing deterrent forces of the two states highlighting how the arms race evolved in an environment of suspicion and distrust.

Accumulation of Indian deterrent force

India has been rapidly modernizing its deterrent force since 1998. Global estimates suggest that it currently possesses around 160 nuclear warheads.[40] India's inventory of operational land-based ballistic missiles includes short-range Prithvi-II and Agni-I; the medium range-range Agni-II; and the intermediate-range Agni-III. The nuclear or conventionally armed Prithvi-II has a range of 250–350 kilometres. Agni ballistic missile has possibly Prithvi's nuclear delivery role. The road-mobile Agni-I is dual-capable, having a range of 700 kilometres. The Agni-II and nuclear-capable Agni-III have a range of 2000 and 3200 kilometres, respectively. The Agni-IV incorporates advanced technological features, including composite rocket engines, improved stage separation and a state-of-the-art navigation system.[41] Agni-V, ICBM was successfully launched in 2015. India is currently also developing Agni-VI, MIRVs and more manoeuvrable warheads.[42] These trends raise questions about whether India's nuclear force development is directed by the principle of credible minimum deterrence or aims to build nuclear war-fighting capabilities.[43]

India continued to embark on the modernization of its air, sea and land-based forces and delivery platforms for its nuclear weapons amid the ongoing geopolitical transformation. In the air domain, it holds two-three squadrons of Mirage 2000H, Jaguar IS/IB fighter bombers and French Rafale fighter jets that remain at the core of its nuclear strike force,[44] with a range that extends deep into Pakistan and China. At sea, India is building SSBNs and ship launch ballistic missiles.[45] The first SSBN, the Arihant, embarked on sea trials in 2014 and 2016. A second Arihant class nuclear submarine is currently undergoing sea trials[46] and development of the third submarine is also underway. The Arihant will carry K-15 SLBM with a range of 700 kilometres. The second class of SLBMs is K-4 with a range of up to 3500 kilometres with the capability to strike targets in Pakistan, China and the Indian Ocean. India is also working on a K-5 SLBM in the 5000 kilometres range. More so, the 350-kilometres Dhanush missile is also a naval version of Prithvi-II which gives India a rudimentary sea-based nuclear strike capability. India is also working on land, sea and air-capable Nirbhay subsonic

ground-launched cruise missile with a range of 700–1000 kilometres. India is improving the sea-launched Nirbhay for the Arihant submarine while the air-launched version is being developed.[47]

India has initiated testing indigenous endo and exo-atmospheric missile defence system-designated Advanced Air Defense (AAD) and Prithvi Air Defense (PAD), respectively.[48] It has purchased a Russian S-400 air defence system capable of intercepting short and medium-range ballistic and cruise missiles. It is upgrading and extending the service life of Mirage and Jaguar fighter bombers and has purchased 36 Rafale aircraft from France to take forward the role. India's Kiev-class aircraft carrier, INS Vikramaditya (purchased from Russia) entered service in 2013. A Vikrant-class aircraft carrier was commissioned by the Prime Minister, Narendra Modi in September 2022[49] and another one is expected to be in service by 2025.

In 2012, both India and the U.S. initiated the Defence Technology and Trade Initiative (DTTI)[50] to collaborate in areas that include: the establishment of a chemical-biological protective ensemble of troops; development of mobile electric hybrid power stations; next-generation small unmanned aircraft; intelligence and surveillance module for transport aircraft; digital helmet-mounted displays; and the joint biological tactical detection systems. Despite having a huge domestic defence industry, India needs strategic partners like France, Russia, the U.S. and Israel to buy hi-tech and state-of-the-art technologies.[51] India has purchased C-130 J and C-17 transport aircraft that provide heavy lift capability and support high-altitude operations in the Himalayas. India is the first foreign country to get P8-1 Poseidon maritime surveillance aircraft, adding to the defensive capability of India's eastern naval fleet and protecting India's interests in the Bay of Bengal and the Andaman Sea.

The U.S. and India have also inked a deal on military logistics exchange, known as the Logistics Exchange Memorandum of Agreement (LEMOA) to promote sharing of both the states' facilities for refuelling, spare parts and supplies.[52] In September 2018, the two states announced the signing of the Communications Compatibility and Security Agreement (COMCASA).[53] The COMCASA will allow India to procure critical defence technologies, access communication networks and ensure interoperability between the two forces. The two sides also signed Basic Exchange and Cooperation Agreement (BECA) in October 2020[54] for sharing geospatial intelligence and may prove critical for sharing data about the disposition of adversary forces. The U.S. and India agreed to initiate exchanges between the U.S. Naval Forces Central Command (NAVCENT) and the Indian Navy as part of the deepening maritime cooperation in the western Indian Ocean. These agreements would allow India better freedom of navigation and mobility in the entire IOR and blue waters of the Asia-pacific thereby advancing its defence capacity. Kamran Akhtar in the above context argued,[55]

> [India] is seeking military superiority and is driven by aspirations of regional and global dominance. Extra-regional powers have also pandered

> to this revisionist agenda by designating India as a net security provider. This is a dangerous proposition which bestows India with a sense of entitlement to build military power and adopt aggressive postures which are much beyond India's genuine national security requirements.

India's force modernization certainly compels Pakistan to counterbalance by maximizing its own security. How Pakistan in turn accumulates its military power today is discussed below.

Accumulation of Pakistan's deterrent force

Pakistan's threat perception of India's doctrinal changes and deterrent force modernization can be seen through the prism of offensive realism. For instance, India's force modernization is perceived by Pakistan as increased insecurity of its own. When asked about Pakistan's response to India's offensive doctrinal posture, Zafar Khan commented,[56]

> Pakistan does not wish to indulge in a bigger arms race in South Asia. Its nuclear forces are India-specific for deterrence purposes. However, Pakistan follows suit at a minimal level against what India develops. Therefore, Pakistan attempts to develop effective countermeasures to fill the deterrence gaps that are important for balancing and retaining deterrence stability in South Asia.

Indeed, Pakistan possesses a small number of nuclear-capable delivery vehicles – many of which are dual-capable and thus be assigned conventional missions. Western estimates suggest that Pakistan possesses 165 nuclear warheads.[57] On land, Pakistan possesses six types of land-based ballistic missiles. Its nuclear-capable short-range missile, Nasr, is designed to offset Indian CSD under which India can carry out rapid and limited conventional attacks on Pakistani territory under the nuclear overhang.[58] The road-mobile Hatf-II, Hatf-III and Hatf-IV short-range ballistic missiles have maximum ranges of 180, 290 and 750 kilometres, respectively. Hatf-V (Ghauri) has a range of 1250 kilometres and Hatf-VI (Shaheen-II) has a range of 1500 kilometres. Pakistan has also developed a Shaheen-III ballistic missile capability to strike at a range of 2750 kilometres and reach targets throughout India including the Andaman and Nicobar Islands.[59]

In the air domain, Pakistan possesses F-16 A/B with a range of 1600 kilometres. Later, Mirage-5 combat aircraft was also assigned the nuclear role. Mirage-3 has been used for test flights of nuclear-capable Ra'ad air-launched cruise missiles. 'The Pakistani Air Force is adding aerial refuelling capability to the Mirage to enhance] a nuclear strike mission.'[60] Pakistan has developed JF-17 fighters to replace ageing Mirage 5s. Pakistan might integrate Ra'ad - an air-launched cruise missile to

JF-17 thunder. At sea, Pakistan has established Naval Strategic Forces Command to oversight the second strike force and also developed the submarine-launched cruise missile (SLCM) Babur-III. Pakistan has lately tested MIRV-capable, Ababeel ballistic missiles to counter Indian ballistic missile defence systems.

Pakistan's evolving security posture is affected by the developments taking place in South Asia. One, Indo-U.S. growing strategic partnership has stimulated Pakistan's security concerns. Two, the suspension of communication channels/CBMs between India and Pakistan and a lack of arms restraint arrangement make it more difficult for states to moderate the security dilemma as the likelihood and number of conflict scenarios have increased while avenues for cooperation have decreased. Three, new technologies and weapons systems, such as BMD systems, MIRVs, sea-based systems and short-range missiles have made deterrence stability in South Asia increasingly delicate. Four, India's recent procurement of S-400 has raised concerns in Pakistan and seems to further aggravate the arms race in South Asia. For example, India has purchased its five regiments of S-400, out of which three regiments will be deployed against Pakistan.[61] It seems this development may push Pakistan to the production of more missile systems in search of deterrence stability. India's force modernization in the backdrop of the nuclear suppliers group (NSG) waiver has further intensified Pakistan's security concerns as is discussed below.

NSG waiver to India and Pakistan's concerns

The U.S. political support for NSG's decision to grant a waiver to India,[62] offering the latter an outreach to global fuels and reactors has led to transforming India from a target of the international non-proliferation regime to a stakeholder in it. This arrangement has permitted New Delhi to secure international assistance for its civilian nuclear reactors without any legal commitments to halt its rapidly expanding nuclear weapons program.[63] This deal may create a problem of power asymmetry and offers New Delhi a foundation for technological modernity, scientific competence and independence to generate energy locally. Zamir Akram estimates, 'this waiver has given India the potential to build 50 weapons in a year.'[64] India's modernization plans also include the production of larger quantities of fissile material for nuclear weapons production. It could choose 'to build a larger plutonium-production reactor to add to CIRUS and Dhruva, its two weapon-grade plutonium-production reactors at the Bhaba Atomic Research Centre in Bombay.'[65] Presumably, it would be another way that India could increase its fissile material stockpile to expand its small-scale centrifuge enrichment program and make highly enriched uranium for nuclear weapons. These concerns directly shape Pakistan's threat perception vis-à-vis India and consequently affect its reliance on nuclear weapons. Riaz Khan argued, 'Pakistan regards the NSG waiver to India as a discriminatory act and denial of the same to Pakistan.

This has implications for Pakistan's position relating to arms control and disarmament in the South Asian region.'[66]

Concerning the repercussions of an exceptional NSG waiver to India, the following factors further aggravate Pakistan's security concerns. First, despite the much-touted separation of military and civilian nuclear facilities by India, it has asserted the right to take an independent decision about which facilities in the future it will place under safeguards regardless of their civilian or military use. Hence, there will be little transparency regarding India's use of fissile material for the production of nuclear weapons and the use of nuclear fuel purchased from abroad. Second, NSG member states are unlikely to pressurize India to adopt any legally binding disarmament-related measures or even sign the Comprehensive Test Ban Treaty (CTBT). Third, the U.S. cannot keep India from testing a hydrogen bomb. Fourth, the deal contains no provisions to bind India to initiate an arms restraint arrangement in the region with China or Pakistan. Fifth, the deal has created pathways for India to secure its NSG membership that, in turn, has created a new debate on the non-NPT states' criteria for adherence to the NSG. Sixth, given India's history of violating peaceful nuclear use agreements, access to the international nuclear market may lure it to divert nuclear technology for production of the nuclear weapons[67] and, lastly, the deal serves as an instrument for New Delhi to pursue its global political aspirations and revisionist foreign policy agenda, like creating a pedestal for India to secure the United Nations Security Council (UNSC) membership. These concerns attached to exceptional NSG waiver directly drive the South Asian states' focus on the acquisition of new technologies and deterrent force modernization. Akram and Riaz believe that the NSG waiver certainly has severely impacted the prospects for arms control in South Asia.[68] In a nutshell, the NSG waiver, a country-specific approach has created CBMs failure and an arms control crisis between India and Pakistan that inherently are destabilizing the regional-centric deterrence.

Suspension of CBMs and absence of arms control talks

The CBMs between India and Pakistan have seemingly failed to create an enabling environment for arms control discussions. The hotline between the Directors General of Military Operations (DGMOs) and foreign secretaries,[69] the Agreement on Pre-Notification of Flight Testing of Ballistic Missiles and the Agreement on Reducing the Risks from Accidents Relating to Nuclear Weapons, were the major bilateral nuclear agreements under the guiding framework of the Lahore Declaration.[70] Arguably, the bilateral nuclear CBMs between the two states are predominantly influenced by alleged cross-border terrorism, the Kashmir conflict, growing mistrust due to the engagement of the forces and growing weapon asymmetry. The scope of existing CBMs in South Asia predominantly remained confined to conflict-avoidance and crisis management, and have little emphasis on arms control and conflict

resolution. The heightening tensions around the Kashmir dispute reflect this gap and also signify serious risks of crisis stability.

Although, Pakistan proposed to India a comprehensive Strategic Restraint Regime (SRR) in 1999 that India refused to accept.[71] The proposed SRR has three interlocking elements: (a) nuclear restraint; (b) conventional balance; and (c) resolution of core disputes, especially Jammu and Kashmir.[72] India never aspired to initiate negotiations with Pakistan, considering it a sign of weakness. New Delhi's continued unwillingness to engage in meaningful dialogue only adds to the frustration and CBM fatigue in Islamabad. Zamir Akram says, 'Pakistan is always ready to engage with India on composite dialogue but negotiations do not fit with Modi's fascist ideology.'[73] He further said, 'currently there is no Western pressure on India to resume dialogue with Pakistan due to the shifting focus from South Asia to the Asia Pacific. Thus, the possibility for the resumption of the dialogue seems bleak.'[74] Moreover, the lack of CBMs and the absence of regional arms control arrangements have curtailed space for restraint measures.[75] This, in turn, has paved the way towards offensive war-fighting strategies and counter-force postures with direct ramifications for crisis stability in the region. CBMs have no successful track record and the absence of arms control arrangement has increased stress for deterrence stability.

The pursuit of arms control and the triumph of CBMs requires serious political will. However, the absence of strategic dialogue between the adversaries only contributes to increasing reliance on nuclear weapons, the inability to explore alternatives to address security problems and the lack of mutual understanding of the shared threats and destructive consequences of the possible use of nuclear weapons. Such an environment also reduces space for the academic community and other civil society organizations to influence policy-making on nuclear dangers stimulated by offensive technologies and war-fighting strategies. Conversely, the ongoing wave of nationalist populism – as reflected in the successive terms of the Modi government[76] – exploits public sentiments by creating war hysteria that only diminishes the prospects of arms control and CBMs.

Furthermore, states' alliance politics, inadequate and ineffective channels of communication, conventional force disparity and frequent border skirmishes can aggravate negative threat perceptions of one against the other. Threat perceptions usually are a function of power asymmetries that in turn exacerbate a state's dilemma of interpretation and dilemma of response and eventually trigger conflicts.[77] States' interference in each other's territories through proxies, political rhetoric like propaganda, hate speech and competing or irreconcilable narratives breed heightened threat perceptions, driving a vicious cycle of dangerous conditions under which misunderstandings could escalate to unprecedented levels of confrontation between the nuclear possessor states. Such an environment requires concerted, though little, steps to develop mutual trust and pave the way towards a broader cause (as discussed in Chapter 6).

Conclusion

Against the backdrop of the global power shift, strategic competition between the U.S. and China has redefined the regional strategic architecture of South Asia. The U.S. strategic alliance with India as a net security provider and the latter's quest for power maximization and status-driven hegemonic role in the region has placed it on a higher strategic pedestal for force modernization and doctrinal modifications. India's accumulation of power and access to the global technological market through waivers such as the NSG and grant of strategic trade authorization (STA) level status by the U.S. has increased weapons asymmetries thereby undermining regional strategic stability. More so, the introduction of new technologies and weapon systems such as BMDs, MIRVs, sea-based systems and short-range missiles have made deterrence stability in South Asia increasingly fragile. The inclusion of offensive and war-fighting technologies in India's inventory determines its growing reliance on war-fighting or compellence strategy while Pakistan's reliance on nuclear first use seems to have increased after the inclusion of low-yield weapons in its arsenals.

Notes

1 See Lisa Curtis, 'The Triangular Dynamic in Asia: The US, India, and China,' *The Heritage Foundation,* April 26, 2007, https://www.heritage.org/asia/report/the-triangular-dynamic-asia-the-us-india-and-china.
2 Ibid.
3 For details, Robert Einhorn and Waheguru Pal Singh Sidhu, 'The Strategic Chain Linking Pakistan, India, China, and the United States,' *Arms Control and Non-Proliferation Series Paper 14* (March 2017), http://hdl.handle.net/10945/52042.
4 Toby Dalton and Tong Zhao, *At a Crossroads? China-India Nuclear Relations After the Border Clash* (Washington, D.C.: Carnegie Endowment for International Peace, 2020), p. 8.
5 Alastair Lamb, *Kashmir A Disputed Legacy 1846–1990* (Hertfordshire: Roxford Books, 1991), p. 2.
6 Chris Ogden, *Indian Foreign Policy: Ambition and Transition* (Cambridge: Polity Press, 2014), p. 43.
7 Jeff M. Smith, 'Strategic Autonomy and U.S.-Indian Relations,' *War on the Rocks,* November 6, 2020, https://warontherocks.com/2020/11/strategic-autonomy-and-u-s-indian-relations/.
8 Seymour M. Hersh, *The Price of Power – Kissinger in the Nixon White House* (New York, N.Y.: Summit Books, 1983), pp. 450–452.
9 Harsh V. Pant and Julie M. Super, 'India's "Non-alignment" Conundrum: A Twentieth Century Policy in a Changing World,' *International Affairs* 91, no. 4 (2015): p. 753.
10 Sumit Ganguly, 'Wars without Conflict: Indo-Pakistani Conflict,' *Annals of the American Academy of Political and Social Science* 541, no. 1 (1995): p. 175, https://doi.org/10.1177/0002716295541001012.
11 Rajat Ganguly, 'India's Military: Evolution, Modernisation and Transformation,' *India Quarterly* 71, no. 3 (2015): p. 191, https://doi.org/10.1177/0974928415584021.

12 Scott D. Sagan and Kenneth N. Waltz, 'Indian and Pakistani Nuclear Weapons: For Better or Worse?,' in *The Spread of Nuclear Weapons: A Debate Renewed*, eds. Scott D. Sagan and Kenneth N. Waltz (New York, N.Y.: W. W Norton & Company, 2003), p. 90.
13 Devin T. Hagerty, 'India's Regional Security Doctrine,' *Asian Survey* 31, no. 4 (1991): pp. 362–363, https://doi.org/10.2307/2645389.
14 See K. M. De Silva, *Regional Powers and Small State Security: India and Sri Lanka 1977–90* (Washington, D.C.: The Woodrow Wilson Centre Press, 1995), p. 321.
15 Anand Kumar, 'India-Maldives Relations: Is the Rough Patch Over?,' *Indian Foreign Affair Journal* 11, no. 2 (April–June 2016): p. 155, https://www.jstor.org/stable/45341094.
16 Hagerty, 'India's Regional Security Doctrine,' pp. 360–362.
17 Manzoor Khan Afridi and Abdul Zahoor Khan, 'Pak-China Boundary Agreement: Factors and Indian Reactions,' *International Journal of Social Science Studies* 4, no. 2 (February 2016): p. 3, https://doi.org/10.11114/ijsss.v4i2.1296.
18 Michael Beckley, 'The Emerging Military Balance in East Asia,' *International Security* 42, no. 2 (Fall 2017): pp. 78–119, https://doi.org/10.1162/ISEC_a_00294.
19 Frank O'Donnell and Alexander K. Bollfrass, *The Strategic Postures of China and India: A Visual Guide* (Cambridge, M.A.: Belfer Center for Science and International Affairs, 2020), p. 1; and Vinay Kaura, 'India's Relations with China from the Doklam Crisis to the Galwan Tragedy,' *India Quarterly* 76, no. 4 (2020): pp. 501–518, https://doi.org/10.1177/0974928420961768.
20 Stephen P. Westcott, 'Seizing a Window of Opportunity? The Causes and Consequences of the 2020 Sino-Indian Border Stand-Off,' *Journal of Asian Security and International Affairs* 8, no. 1 (2021): pp. 7–32, https://doi.org/10.1177/2347797021992527.
21 Danielle Rajendram, 'India's New Asia-Pacific Strategy: Modi Acts East,' *Lowy Institute*, December 2014, https://www.lowyinstitute.org/sites/default/files/indias-new-asia-pacific-strategy-modi-acts-east.pdf.
22 Shishir Gupta, 'Caught between Pakistan's Claim on Kashmir and China's OBOR, India Must Stand on Its Own,' *Hindustan Times,* May 20, 2017, https://www.hindustantimes.com/opinion/caught-between-pakistan-s-claim-on-kashmir-and-china-s-obor-india-must-stand-on-its-own/story-ZJ8Lq8Nq2b-Nd19seD7le9M.html.
23 Andrew S. Erickson, Walter C, Ladwig, III and Justin Mikolay, 'Diego Garcia and the United States Emerging Indian Ocean Strategy,' *Asian Security* 6, no. 3. (September 2010): p. 230, https://doi.org/10.1080/14799855.2010.507408.
24 Michael Beckley, 'The Emerging Military Balance in East Asia: How China's Neighbors Can Check Chinese Naval Expansion,' *International Security* 42, no. 2 (2017): pp. 82–84, https://doi.org/10.1162/ISEC_a_00294.
25 Sufian Ullah, 'Realignments and Evolving Nuclear Capabilities in the Indian Ocean: Effects on Security Environment,' *Australian Journal of Maritime and Ocean Affairs* 13, no. 4 (2021): pp. 262–272, https://doi.org/10.1080/18366503.2021.1883820.
26 Curtis, 'The Triangular Dynamic in Asia.'
27 Hillary Clinton, 'America's Pacific Century,' *Foreign Policy*, October 11, 2001, https://foreignpolicy.com/2011/10/11/americas-pacific-century/; also see
Stephen Burgess, 'The U.S. Pivot to Asia and Renewal of the U.S.–India Strategic Partnership,' *Comparative Strategy* 34, no. 4 (2015): pp. 367–379, https://doi.org/10.1080/01495933.2015.1069517.
28 Clinton, 'America's Pacific Century.'
29 Muhammad Ayoob, 'India in South Asia: The Quest for Regional Predominance,' *World's Policy Journal*, 7, no. 1 (Winter 1989–1990): pp. 112–114.

30 Muhammad Tehseen, 'Sino-US Competition: Implication for South Asia and the Asia Pacific,' *Institute of Strategic Studies Islamabad* 37, no. 4 (Winter 2017): p. 11, https://www.jstor.org/stable/48537569.
31 John Mearsheimer, *The Tragedy of Great Power Politics* (New York, N.Y.; London: W.W. Norton & Company, 2003), pp. 155, 160, 261 and 272; Yuang-Kang Wang, 'Offensive Realism and the Rise of China,' *Issues and Studies English Edition* 40, no.1 (March 2004): p. 179; Liu Feng and Zhang Ruizhuan, 'The Typologies of Realism,' *Chinese Journal of International Politics*, 1, no. 1 (2006): p. 124.
32 B. J. C. Mckercher, *Routledge Handbook of Diplomacy and Statecraft* (New York, N.Y.: Routledge, 2012), p. 122.
33 Robert Gilpin, *War and Change in World Politics* (Cambridge: Cambridge University Press, 1981), p. 106.
34 Usman Ghami and Khalid Chandio, 'Indian Great Power Aspirations: An Analysis,' *Islamabad Policy Research Institute Journal* 13, no. 2 (2013): p. 113.
35 Stephen P. Cohen, *India: Emerging Power* (Washington, D.C.: Brookings Institution Press, 2001), p. 31.
36 Amin Ahmed, 'India Has World's Third Biggest Defence Spending Now,' *DAWN*, April 28, 2020, https://www.dawn.com/news/1552802.
37 N. C. Bipindra, 'Rigid Rules Trip Modi's $250 Billion Plan to Modernise India's Defence,' *The Economic Times*, July 13, 2018, https://economictimes.indiatimes.com/news/defence/rigid-rules-trip-modis-250-billion-plan-to-modernise-indias-defence/articleshow/60370605.cms?from=mdr.
38 Zafar Nawaz Jaspal, *India's 'Surgical Strike' Stratagem Brinkmanship and Response* (Islamabad: Khursheed Printers, 2019), p. 107.
39 Mansoor Ahmed and Maimuna Ashraf, 'The Pulwama-Balakot Crisis: A Strategic Assessment,' *Centre for International Strategic Studies Islamabad* VII, no. 1 (2020): p. 2.
40 See Hans M. Kristensen and Matt Korda, 'Indian Nuclear Forces, 2022,' *Bulletin of Atomic Scientists* 78, no. 4 (2022): p. 224, https://doi.org/10.1080/00963402.2022.2087385.
41 Rizwana Abbasi, 'Evolving Security Dilemma between the US and China: Implications for Regional Strategic Stability on South Asia,' *Pakistan Horizon* 73, no. 1 (2020): p. 70.
42 Yogesh Joshi, Frank O'Donnell, and Harsh V. Pant, *India's Evolving Nuclear Force and Implications for U.S. Strategy in the Asia Pacific* (Carlisle: US Army War College Press, 2016).
43 Yogesh Joshi and Frank O'Donnell, *India and Nuclear Asia: Forces, Doctrine, and Danger* (Washington, D.C.: Georgetown University Press, 2018), p. 6.
44 Ibid.
45 Joshi, O'Donnell, and Pant, *India's Evolving Nuclear Force*.
46 Raminder Kaur, 'Stealth-Spectacles: The Discursive Waves of the Nuclear Asian Seascape,' *Journal for Peace and Nuclear Disarmament* 4, no. 1 (2021): pp. 163–185, https://doi.org/10.1080/25751654.2020.1864184.
47 Hans M. Kristensen and Matt Korda, 'Indian Nuclear Weapons, 2022,' *Bulletin of the Atomic Scientists* 78, no. 4 (2022): p. 233, https://doi.org/10.1080/00963402.2022.2087385.
48 Rizwana Abbasi and Sufian Ullah, 'Rising Strategic Instability and Declining Prospects for Nuclear Disarmament in South Asia – A Pakistani Perspective,' *Asian Journal of Peacebuilding* (2022): p. 13, https://doi.org/10.18588/202202.00a207.
49 Devjyot Ghoshal, 'Modi Commissions India's First Home-Built Aircraft Carrier in Defence Push,' *Reuters,* September 2, 2022, https://www.reuters.com/world/india/modi-commissions-indias-first-home-built-aircraft-carrier-defence-push-2022-09-02/.

50 See Todd D. Carroll, 'The Largest Tiger: India in the U.S. Policy toward Indo-Asia Pacific,' in *Avoiding the Trap: U.S. Strategy and Policy for Competing in the Asia-Pacific Beyond the Rebalance*, eds. D. Lai, J. F. Troxell and F. J. Gellert (Washington, D.C.: U.S. Army War College Press, 2018), pp. 83–106.
51 Pundi Srinivasan Raghavan, 'National Security Determinants of Foreign Policy,' in *India's Foreign Policy: Drivers and Trends*, eds. A. Gupta and A. Wadhwa (New Delhi: Sage Publications, 2020), p. 42.
52 Satu Limaye, 'Integrating an Ally and Aligner in a Principled Security Network: The United States and the India-Japan Strategic Partnership,' in *India and Japan: Assessing the Strategic Partnership,* eds. R. Basrur and S. N. Kutty (Singapore: Palgrave MacMillan, 2018), p. 94.
53 Sigdel, Anil, *India in the Era of China's Belt and Road Initiative: How Modi Responds to Xi* (London: Lexington Books, 2020), p. 149.
54 Rohan Mukherjee, 'Chaos as Opportunity: The United States and World Order in India's Grand Strategy,' *Contemporary Politics* 26, no. 4 (2020): p. 423, https://doi.org/10.1080/13569775.2020.1777040.
55 One of the authors' interview with Kamran Akhtar, Additional Secretary of Arms Control and Disarmament, Ministry of Foreign Affairs, Pakistan, November 4, 2022.
56 One of the authors' interview with Zafar Khan, Professor of International Relations, Balochistan University of Information Technology, Engineering, and Management Sciences (BUITEMS), on June 15, 2022.
57 Hans M. Kristensen, and Maat Korda, 'Pakistani Nuclear Weapons, 2021,' *Bulletin of the Atomic Scientists* 77, no. 5 (2021): p. 265, https://doi.org/10.1080/00963402.2021.1964258.
58 Joshi, and O'Donnell, 'India and Nuclear Asia,' p. 54.
59 Ibid, p. 58.
60 Hans M. Kristensen, Robert S. Norris and Julia Diamond, 'Pakistani Nuclear Forces, 2018', *Bulletin of the Atomic Scientists* 74, no. 5 (2018): p. 352.
61 Summar Iqbal Babar, Masood Ur Rehman Khattak and Mujahid Hussain Sargana, 'Indo-Russian Strategic Partnership and Indian Military's Cold Start Doctrine,' *Policy Perspectives* 15, no. 2 (2018): p. 79, https://www.jstor.org/stable/10.13169/polipers.15.2.0071.
62 Mark Hibbs, 'Eyes on the Prize: India's Pursuit of Membership in the Nuclear Suppliers Group,' *The Non-Proliferation Review* 24, no. 3–4 (2017): pp. 275–296, https://doi.org/10.1080/10736700.2018.1436253.
63 Mansoor Ahmed, *India's Nuclear Exceptionalism: Fissile Material, Fuel Cycle, and, Safeguards* (Cambridge: Belfer Center for Science and International Affairs, 2017), p. 2.
64 One of the authors' interview with Ambassador (Retd.) Zamir Akram, Advisor to the Strategic Plans Division, Pakistan, March 23, 2022.
65 Ahmed, *India's Nuclear Exceptionalism,* p. 15.
66 One of the authors' interview with Riaz Muhammad Khan, Former Foreign Secretary, Government of Pakistan, December 10, 2019.
67 Zafar Nawaz Jaspal, 'Indo-U.S. Nuclear Deal: Altering Global Nuclear Order,' *Institute of Strategic Studies, Islamabad* 28, no. 2/3 (Summer and Autumn 2008): p. 22, https://www.jstor.org/stable/45242436.
68 One of the authors' interview with Akram.
69 Michael Krepon, *Nuclear Risk Reduction in South Asia* (New York, N.Y.: Palgrave Macmillan, 2004), p. 19.
70 Asma Shakir Khawaja, *Shaking Hands with Clenched Fists: The Grand Trunk Road to Confidence Building Measures between Pakistan and India* (Islamabad: National Defense University, 2018), p. 37.

71 P. R. Chari, 'Nuclear Restraint, Risk Reduction, and the Security-Insecurity Paradoxin South Asia,' in *Nuclear Risk Reduction in South Asia*, ed. Michael Krepon (New York, N.Y.: Palgrave Macmillan, 2004), p. 65.
72 Muhammad Khan, Ahmed Khan, and Syed Turab Hyder, 'Strategic Restraint Regime in South Asia,' *Margalla Papers* 22 (2018): p. 83.
73 One of the authors' interview with Akram.
74 Ibid.
75 Zafar Khan, 'Balancing and Stabilizing South Asia: Challenges and Opportunities for Sustainable Peace and Stability,' *International Journal of Conflict Management* 30, no. 5 (2019): p. 599, https://doi.org/10.1108/IJCMA-08-2018-0093.
76 Johannes Plagemann and Sandra Destradi, 'Populism and Foreign Policy: The Case of India,' *Foreign Policy Analysis* 15, no. 2 (2019): p. 283, https://doi.org/10.1093/fpa/ory010.
77 Andrew Liaropoulos, 'Exploring the Theory and Practice of the Security Dilemma,' *The International Spectator* 44, no. 1 (2009): p. 202, https://doi.org/10.1080/03932720802693291.

3 Surgical Strike Stratagem: New Patterns of Engagement

Introduction

This chapter investigates the conflict dynamics and war-fighting strategies between India and Pakistan covering the time from 2016 to 2020. Since Narendra Modi took charge as Prime Minister of India in 2014, India's revisionist designs have gained prominence. India's military operations in Jammu and Kashmir have aggravated violence, suppression and a sense of discontentment among the masses and Kashmiri youth. Significantly, the killing of Burhan Wani, a Kashmiri youth commander of Hizbul Mujahideen acted as an impetus for the initiation of a new era of an uprising in Jammu and Kashmir.[1] Against the backdrop of Wani's killing, a series of violent incidents took place in Indian-administered Kashmir and within India. Further, there was a visible upsurge in the frequency of border skirmishes between the two nuclear-armed countries at the LoC in 2015 which led to causalities on both sides. The two rival countries were found to be entangled in a traditional pattern of reciprocal accusations of supporting terrorism.[2] Nevertheless, the violent events continued to occur endangering the peace and stability of South Asia. Against this backdrop, the terrorist attack on an Indian military base in Pathankot and Uri led India to manifest offensive/war-fighting doctrines such as the Joint Doctrine of the Indian Armed Forces and the Land Warfare Doctrine. Later, the two events such as the Pulwama/Balakot crisis and the Indian revocation of articles 370 and 35A, ripping off the autonomous status of Kashmir from the Indian constitution further complicated the regional security dynamics. Based on the above premise, this chapter investigates the following questions i.e., how crises such as Pathankot, Uri and Pulwama/Balakot impacted the conflict dynamics? How has India's manifestation of its offensive doctrines and surgical strike stratagem changed the patterns of warfare between India and Pakistan? How does the illegitimate altered status of Jammu and Kashmir result in a crisis of trust and a suspended peace process between the two states?

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Pathankot incident

On 2 January 2016, six militants infiltrated and attacked the IAF base located in Pathankot, killing seven Indian soldiers. In turn, Indian forces timely retaliated thereby killing all six terrorists.[3] Indian authorities employed a strategy of coercive diplomatic campaign and blamed Pakistan for supporting the non-state actors in conducting the violent act. Indian Minister of Home Affairs Rajnath Singh declared, 'Pakistan is our neighbouring country. We want good relations with not just Pakistan but with all our neighbours. We also want peace but if there is any terror attack on India, we will give a befitting reply. We will hit hard.'[4] In line with the same policy, Indian Defence Minister Manohar Parrikar blamed Pakistan for involvement in the violent act that occurred in the Indian-administered Kashmir.[5] India successfully managed its coercive diplomacy against Pakistan at the global level.[6] For example, the President of the U.S., Barack Obama, acknowledged India's stance that the terrorist act originated from Pakistan's territory. The U.S. President stated that Pakistan has an opportunity to show that it is serious about delegitimizing, disrupting and dismantling terrorist networks. The West gave the message of zero tolerance for safe havens, saying that the terrorists must be brought to justice.[7]

Indeed, the diplomatic pressure from the international community forced both India and Pakistan to initiate the negotiation process and ensure peace in a nuclearized South Asia. The Prime Ministers of India and Pakistan held a telephone conversation to discuss this crisis. Prime Minister Sharif expressed his grief to Prime Minister Modi for human loss in instead of during the Pathankot incident.[8] The Prime Minister of Pakistan emphasized that terrorists will not be permitted to disrupt the peace initiatives undertaken by the two countries. Prime Minister Sharif ensured Prime Minister Modi that a comprehensive investigation would be conducted in Pakistan to find any clue linking to information provided by the relevant Indian authorities.[9] The U.S. administration advised both South Asian nuclear rivals to continue the negotiation process despite violent episodes i.e., Pathankot. Importantly, the U.S. commended Pakistani leadership for its rational policy approach in the aftermath of the attack.[10]

Indeed, Pakistan denied Indian charges of supporting terrorism,[11] nevertheless, it took a few concrete steps by arresting some of the extremists belonging to JeM. Additionally, Pakistan proposed to formulate a Joint Investigation Team (JIT) to probe the facts. India accepted the proposal of a joint investigation and permitted Pakistan's five members team to visit the incident sight for the collection of data concerning the violent act perpetrated in Pathankot.[12] Interestingly, the Pakistani investigation team concluded that no evidence was indicated whatsoever for Pakistan's involvement in the Pathankot terrorist attack. The Pakistani investigation team further declared it as a 'drama staged by India to malign Pakistan.'[13] The findings of the investigation team concerning Pakistan's noninvolvement in the

terror incident were also confirmed by the Director General of the National Investigative Agency, India.[14] The outcomes of this inquiry, instead of creating a positive impact further ended up with both states blaming each other.

Much like the previous incidents, once again efforts were undertaken by both countries to initiate a comprehensive dialogue process; however, the talks between the two neighbouring countries were cancelled due to conflicting directions such as India wanting to talk about terrorism while Pakistan aimed to focus on the Kashmir dispute. The then Indian Minister of External Affairs Sushma Swaraj stated that 'terror and talks cannot go hand-in-hand.'[15] Thus, peace and stability in a nuclearized South Asia were further shunned after the capture of an Indian spy, Kulbhushan Jadhav, alleged Research and Analysis Wing (RAW – Indian intelligence agency) member by the Pakistani military in Balochistan (Pakistani territory) while trying to cross into the country from Iran on 3 March 2016. The Pakistani military termed his capture as evidence of Indian involvement in espionage and sabotage activities against Pakistan and the 'proof of Indian interference and state-sponsored terrorism.'[16] Kulbhushan publicly confessed[17] on Pakistani television screens for promoting sabotage in Pakistan. Pakistan initiated his trial thereby denying him access to Indian authorities to meet him. Jadhav was court-martialled and sentenced to death by a military tribunal for espionage, however, he is still in detention but has not yet been executed. Mistrust further increased with the arrest and detention of Jadhav. This incident deepened the crisis of trust between the two states. In a very short interval, the two states witnessed another crisis, called the Uri attack as discussed below.

The outbreak of the Uri crisis

On 18 September 2016, four heavily armed militants ambushed the Indian army base in Uri, located near the LoC in the Indian-administered Kashmir. The deadly attack killed at least 17 soldiers. All of the assailants were also killed in the military operation conducted by the Indian forces to clear the area. Significantly, the attack occurred amidst a violent uprising in the disputed territory against India.[18] This terror event once again repeated the same cycle of the blame game. For example, the Indian government blamed Pakistan for supporting the terrorist outfits in perpetrating the Uri attack while Pakistan denied the charges of any involvement in the violent act.[19]

India hastily blamed Pakistan without even conducting or waiting for any investigation. The Foreign Ministry of Pakistan asserted that India had made this a regular practice to blame Pakistan for anything which happened inside Indian-administered Kashmir or India. The Ministry stated, 'in the past, many Indians were involved in the terrorist acts for which India blamed Pakistan'[20] thus, Pakistan categorized the Indian authorities as 'vitriolic.'[21] Prime Minister Sharif stated, 'the Uri attack can be a reaction of the atrocities in Jammu and Kashmir, as the close relatives and near and dear ones of those killed and blinded over in the last two months were hurt

and outraged. How could India accuse Pakistan only hours after the Uri incident without holding any inquiry or investigation?'[22] The then Pakistan's Chief of Army Staff General Raheel Sharif asserted that the Indian authorities in the aftermath of the attack were propagating a 'hostile narrative.' He further communicated that Pakistan's armed forces were 'prepared to respond to the entire spectrum of direct and indirect threat.'[23]

India escalated the crisis by suspending cooperation on the Indus Water Treaty. Prime Minister Modi while chairing a meeting in the wake of the Uri incident stated, 'blood and water cannot flow together.'[24] Then advisor to the Prime Minister of Pakistan, Sartaj Aziz told the Senate that the revocation of the Indus Water Treaty by India can be taken as an act of war against Pakistan.[25] Aziz's statement supported the notion of a possible water war between India and Pakistan.[26] Aziz asserted that the Indian violation of the treaty could increase the hostilities between the two rival countries and carry the potential to risk peace and stability in the region.[27] He stated, 'Pakistan will not accept Indian aggression in any form and any Indian step for disrupting water flow as upper riparian will pertain to considerable risk of war and hostilities.'[28] He further stated that Pakistan would reach out to the International Court of Justice (ICJ) in case India revoke the treaty unilaterally which is indeed a violation of international law.[29] However, India continued to tow its coercive strategies to compel Pakistan to take concrete action against the alleged terrorist outfits based in Pakistan. In contrast to the past, this time India relied on launching a surgical strike inside Pakistan's territory to target the terrorist camps, which Pakistan invalidated as discussed in the section below.

2016 Surgical Strike – myth or reality?

India adopted an offensive approach in the aftermath of the Uri incident claiming that their troops crossed the LoC into Pakistani-administered Kashmir to conduct a surgical strike in the middle of the night between 28 and 29 September 2016. The Indian authorities further claimed to have killed militants involved in planning to launch attacks in different parts of India.[30] India's Director General of Military Operations (DGMO), Lieutenant General Ranbir Singh in a press conference jointly conducted by the Ministry of External Affairs and the Ministry of Defence stated,[31]

> Some terrorist teams had positioned themselves at launch pads along the Line of Control. The Indian army conducted surgical strikes last night at these launch pads. Significant causalities have been caused to these terrorists and those who are trying to support them … The operations aimed at neutralizing the terrorists have since ceased.

As per the claims, the duration of this small Indian military operation was four hours and the offence started at midnight at 12:30 AM and ended at

04:30 AM. The elite troops were dropped from the helicopters at the LoC. The troops crossed the LoC and penetrated from a range of 500 metres to 2 kilometres inside Pakistani-administered Kashmir to carry out surgical strikes against the terrorist outfits. After the military operation ended, the troops reached the Indian side of LoC where they were airlifted in helicopters.[32] Pakistani government along with the United Nations Mission deployed on the LoC monitored the ceasefire and officially denied any kind of surgical strikes on the Pakistani side.[33] Riaz Muhammad Khan argued that the Indian claim to conduct a surgical strike in September 2016 is dubious.[34] Pakistan's former Military Intelligence Service Chief, General Assad Durrani maintained that India was facing an intensive violent uprising in the Indian-administered Kashmir. Thus, the surgical strike stratagem is more like a face-saving act for the incumbent government in New Delhi.[35] He further added that the Indian offensive could be recognized as a hot pursuit than the rhetoric of surgical strike constructed by India.[36] Nevertheless, Pakistan being aware of the pressure on New Delhi, accepted the description.[37]

The optimist school of thought opines that deterrence has worked during this episode.[38] However, it is pertinent to mention that India's objective to conduct a small military operation that is below Pakistan's redlines is tricky as well as complex in a manner that these redlines are not clear. Importantly, Pakistan also kept these redlines deliberately ambiguous.[39] To conclude, seemingly, India used a compellence strategy to force Pakistan to take action against the terrorist outfits as per their demands. While Pakistan responded with the policy of deterrence by denying and mobilizing its forces to skip the possibility of Indian strikes across the LoC and international border. It goes without saying that since the failure of *Operation Parakram*, India has continuously engaged itself in the development of new war-fighting strategies and, long searched for a space to conduct a short, speedy and limited strike under the nuclear overhang. Against this backdrop, the 2016 Surgical Strike was a well-crafted strategy, nevertheless, could not have been launched successfully due to Pakistan's *deterrence by denial policy*. Yet, the Uri attack was a huge setback as it not only derailed the peace process but also deepened mistrust, uncertainty and fear in both states against each other. Violence remained a sustained and recurring pattern while peace became a distant dream. India moved a step ahead and practically manifested the offensive/war-fighting doctrines to launch surgical strikes at a later stage as discussed below.

Manifestation of offensive doctrines

India's announcement of an ambitious set of war-fighting doctrines such as CSD, JDIAF-2017 and LWD-2018 (as discussed in the preceding chapter) pointed towards its offensive posture. India's new war-fighting strategies (discussed below) refer to its regional hegemonic designs and strategic dominance. Global hegemony is not easy to be attained in modern times and the best a state can do is to make efforts for securing regional hegemony, which

will assist states in getting status to dominate the respective geographical region.[40] To be clear, Indian offensive doctrines are in synchronization with the proposition of offensive realism where it believes in achieving regional hegemonic status through the implementation of its offensive approach. As Mearsheimer argues that the best defence is rooted in offensive strategy.[41] Further, the offensive realist indicates with the support of historical evidence that the majority of wars are won by the aggressor states and asserts that one states' offensive action against another state in the international system pays.[42] Much in line with these assumptions of offensive realism, India is searching for a space to undertake offensive action against Pakistan to establish itself as a regional hegemon.

A critical analysis suggests that the new war-fighting strategies are rooted deep in basic assumptions of offensive realism and are aimed at taking offensive military action against Pakistan under the nuclear overhang to establish its dominance. India believes that attacking Pakistan will pay and serve its purpose. Nevertheless, the recurrence of violence in the Indian-administered Kashmir together with the risk of Indian desire to wage a limited war against Pakistan based on offensive doctrines could seriously threaten the strategic stability in South Asia.

India came up with the announcement of JDIAF-2017 and LWD-2018 to overcome the politico-military challenges in implementing its offensive strategy. According to a Pakistani press release,[43] the Indian desire to gain a hegemonic role in the South Asian region is very much evident with the development of new war-fighting doctrines that are aimed against China and Pakistan. These Indian doctrines are a supplement to the 2004 CSD. These doctrinal changes emphasized the use of technological sophistication to counter conventional and sub-conventional threats from Pakistan. Rajesh Basrur indicated the same by stating, 'the Joint Doctrine and other reforms were developed in response to broader changing circumstances, which incentivized (a) the incorporation of high technology into military strategy; and (b) the need for an integrated approach to military planning, organization and operations.'[44] More so, with the doctrinal changes, India laid down the requisite foundations for the Indian armed forces to conduct operations in a synergized manner to implement its proactive approach to punish Pakistan in the wake of any possible terrorist incident.

The Joint Indian Armed Forces Doctrine-2017

India in line with its ambitious offensive approach announced a new war-fighting doctrine that is known as JDIAF-2017.[45] The core objective of the Indian National Security Policy is to secure the country from international and regional threats. For that reason, the newly developed strategy aims to upgrade conventional and nuclear deterrence policy.[46] These national military objectives are formulated in line with the Indian national security issues which are[47]: (a) prevent war through strategic and conventional

deterrence across the full spectrum of military conflict, to ensure national defence, interests and sovereignty; (b) prosecute military operations to defend the territorial integrity and ensure favourable results during the war to achieve stated/implied political objective(s); (c) provide assistance to ensure internal security, when called upon to do so; (d) be prepared for contingencies at home and abroad to render humanitarian assistance and disaster relief, aid to civil authority and international peacekeeping when called upon to do so; and (e) enable the required degree of self-sufficiency in defence equipment and technology through indigenization to achieve the desired degree of technological independence by 2035. Against this backdrop, India has outlined four objectives in the JDIAF-2017[48]: (a) maintain a credible deterrent capability to safeguard national interest; (b) ensure the defence of national territory, air space and maritime zones including trade routes and cyberspace; (c) maintain a secure internal environment to guard against threats to unity and development; and (d) expand and strengthen constructive engagement with other nations to promote regional and, global peace and stability.

The introduction of JDIAF-2017 is a big leap forward which suggests India's evolving strategic thinking. The convoluted development indicates Indian Armed Forces' direct intervention abroad to achieve its long-dreamed ambitions. Further, India's doctrine extended the threshold of its respective national security objectives by bluntly vowing for the militarization of space. It indicates the intensification of the nuclear arms race in South Asia by moving away from CMD. Implementation of this newly developed doctrine (discussed below) leads to serious implications for deterrence stability in the region. The JDIAF-2017 explicitly recognizes the conduct of surgical strike stratagem as a formal part of India's punitive toolkit and validates the existence of India's CSD, which highlights a shift in its nuclear strategy (discussed in the subsequent chapter). The surgical strike stratagem not only creates dangerous conflict dynamics for the region but also challenges regional deterrence stability.

Land Warfare Doctrine-2018

The Indian military announced Land Warfare Doctrine on 18 December 2018. The newly introduced doctrine is relevant and in synchronization with the previous doctrines. For instance, the title page of the doctrine document declared that this doctrine is required 'to be read in conjunction with the Joint Doctrine of the Indian Armed Forces-2017.'[49] The doctrine essentially focuses on the threat perception and potential response of the Indian army in a limited war scenario.[50] Following the new doctrine, the Indian army is required to be focused on the development of multi-domain capabilities and also facilitation of the enhanced integration amongst the tri-services along with the optimization of the forces and resources that are well prepared to launch an efficient and forceful response in the war.[51]

This new doctrine is also linked to the CSD-2004. To meet the conventional warfare requirements, 'all combat operations will be [placed] as Integrated Battle Groups, under command of combined arms operational headquarters.'[52] The doctrine aimed that 'the Indian Army will employ composite IBGs comprising a mix of five to six battalions to execute conventional combat operations for greater flexibility in force application.'[53] Further, 'each IBG, which would be larger than the existing 3000 personnel-strong brigades but smaller than a 10,000-strong division, would be headed by a two-star officer and include infantry, armoured, artillery, air-defence, and support units, all of which would be backed by attack helicopters.'[54] The philosophy behind the strategy of employing the IBGs is that it will complement the fighting muscle of the pivot corps deployed alongside the international border against Pakistan. The IBGs and pivot corps would penetrate 3 to 5 kilometres deep inside Pakistan within a timeframe of 72 hours. In the meantime, the strike corps would further excel on the accomplishments gained in the initial offensive manoeuvres.[55] Thus, these doctrinal changes were aimed to conduct limited military operations with the employment of advanced technologies against Pakistan.

More so, the LWD-2018 emphasizes the 'force modernization, resource optimization and innovation conceptual processes leading to winning strategies for future wars.'[56] Likewise, it is also highlighted in LWD-2018 that India will, 'enhance punitive response options to greater depth, effect, sophistication and precision.'[57] Additionally, 'the Indian Army will continue to prosecute effective Counter Insurgency/Terrorism operations to ensure deterrence through punitive responses against the state-sponsored proxy wars.'[58]

To achieve requisite compatibility with the military doctrines to wage a limited war against Pakistan, the Indian armed forces have undergone massive military modernization as discussed in the preceding chapter. The acquisition of new technologies has assisted India to overcome inadequacies concerning operational requirements to conduct a limited and lightening offensive warfare strategy against Pakistan. Indian military might have boosted its conventional strength vis-à-vis Pakistan and in fact, provided India with an alternative measure to get its respective political and military goals in line with its offensive doctrines. In this regard, the LWD-2018 indicated the possibility of punitive limited strikes in response to any crisis/violence that occurs in Indian-administered Kashmir and elsewhere in India for which India allegedly blames Pakistan.[59]

The change in India's strategic thinking is evident with the formulation of new offensive doctrines and massive military modernization that has severely challenged the deterrence stability in South Asia. These developments have further increased the conventional disparities between India and Pakistan. Indeed, the above developments have forced Pakistan to build further deep reliance on nuclear capabilities to deter the Indian threat.[60] This is very much evident with the doctrinal evolution of CSD-2004, JDIAF-2017 and LWD-2018 that these doctrinal strategies are laced with the offensive posture to

launch punitive actions against Pakistan. India's pre-emptive strategy generates a dangerous situation where it could lead to the failure of regional-centric deterrence. These doctrinal changes continue to push India towards conducting adventurous military actions against Pakistan. This change in India's strategic thinking and adoption of an offensive military posture is manifested in its quest to establish a surgical strike stratagem as a new normal.

Pulwama/Balakot crisis: Surgical strikes stratagem and Pakistan's response

From 2016 to 2018, three Indian army installations located in *Uri*, *Sunjuwan* and *Nagrota* came under attack with nineteen, twelve (including one civilian) and ten casualties, respectively. The violence continued to occur in Indian-occupied Jammu and Kashmir and the year 2019 was not an exception in this regard. A suicide bomber smashed his vehicle into the convoy of Indian security forces on the highway in the district Pulwama, located in Indian-administered Kashmir on 14 February 2019. This suicide attack killed forty security personnel, subsequently turning the situation into serious tension between India and Pakistan.[61] India blamed Pakistan for its alleged involvement in the Pulwama incident and initiated a coercive diplomatic campaign against Pakistan. In response, Pakistan condemned the violent attack and denied Indian allegations. A spokesperson of Pakistan's Foreign Office stated on the next day, 'We strongly reject any insinuation by elements in the Indian media and government that seek to link the attack to Pakistan without investigation.'[62] The then Prime Minister of Pakistan, Imran Khan extended the proposal to the Indian counterpart in assisting the investigation process and also to bring the culprits to justice involved in the heinous act provided that India shares actionable evidence with the government of Pakistan. Prime Minister Khan stated, 'if you have any actionable intelligence that a Pakistani is involved, give it to us. I guarantee you that we will take action not because we are under pressure, but because they are acting as enemies of Pakistan.'[63] Further, Prime Minster Khan declared that in case of any eventuality from the Indian side, Pakistan will not think to respond but retaliate.[64] This clear signalling from Pakistani leadership certainly sensitized the international community regarding the gravity of the situation, but could not restrain India from taking offensive action against Pakistan.

The Indian Ministry of External Affairs in a statement declared, 'The Prime Minister of Pakistan has offered to investigate the matter if India provides proof. This is a lame excuse.'[65] The Indian official statements indicated a severe trust deficit between India and Pakistan. Further, this time India was strategically ready to implement its offensive strategy against Pakistan in line with its doctrinal evolution. Thus, India's refusal to cooperate with Pakistan further deepened mistrust and uncertainty between the two nuclear rivals. India in line with its new war-fighting strategies and adventurous military doctrines conducted a surgical strike deep inside the territory

of Pakistan in Balakot, located in the province of Khyber Pakhtunkhwa on 26 February 2019. India claimed to have targeted the training camps of JeM, a terrorist outfit blamed to be involved in the Pulwama incident. India accused Pakistan of supporting and/or providing a haven to the militants; however, Pakistan denied such charges.[66] India long searched for a space to wage a limited war or smart offensive strike against Pakistan. The development of numerous adventurous doctrines with each focusing on taking offensive punitive action against Pakistan is evident that the IAF launched its offensive strike, the first of its kind since the 1971 war.

Twelve IAF Mirage 2000 fighter jets crossed into Pakistani territory hitting Balakot from 3:45 AM to 3:53 AM.[67] India dropped Israeli-made Spice bombs[68] on a total number of three targets, however, the fighter jets failed to engage the targets.[69] Apart from the technical faults including malfunctioning in stand-off weapons (SOW) to steer them towards the target due to erroneous terrain altitude data, the IAF managed to deliver the bombs in the forest from a distance of 40 kilometres.[70] Pakistan's Major General Asif Ghafoor of the ISPR stated that Indian military planes violated the LoC, intruding from the Muzaffarabad sector. He said, 'Facing timely and effective response from PAF, [the IAF] released payload in haste while escaping which fell near Balakot.'[71] *The Guardian* reported that the offensive measure was much celebrated in India but the fact of the matter is that it remained unclear whether IAF had targeted something significant or it had been planned merely to ease down public pressure that was created in the aftermath of the Pulwama attack.[72] One of the senior Pakistani retired military officials stated,[73]

> Pakistan possesses a range of doctrinal strategies including FSD which focus on various levels of war, however, choosing or implementing one specific military endeavour depends upon the scenarios to counter the enemy's threat. What India did on 26 February 2019, received a befitting response from Pakistan on the very next day. We should not link Pakistan's response to any specific doctrine or strategy however, the appropriate word for it is 'situational response.'

In retaliation to IAF's offensive, PAF launched 'Operation Swift Retort.'[74] The PAF in a *tit-for-tat* manner but much in contrast to IAF dispatched the formation of its fighter jets. The formation managed to fly near the 15 Corps of the Northern Command Headquarters of the Indian Army where senior command narrowly escaped the hits of the PAF strike force.[75] The PAF employed SOW and successfully struck six 'non-military' targets. Erieye airborne early warning and control (AEW&C) system were airborne within Pakistani airspace.[76] As soon as fighter jets dropped their weapons and turned back, the formation of fighter jets in coordination with each other covered the skies by taking support from the ground radars and AEW&C. The IAF dispatched their patrolling fighters towards the swarm of PAF. During the dogfight, a Pakistani fighter jet fired a BVR AMRAAM

(AIM-120C) to kill Su-30. The fighter jet received nil or minor damage or got critically damaged and remained moot. Nevertheless, PAF fighter jet was able to successfully down an India MiG-21. The Indian pilot survived and parachuted into Pakistan's territory.[77] The Indian aircrew, Wing Commander Abhinandan Varthaman was captured by Pakistani security forces.[78] Interestingly, conventionally superior India restrained to take any further offensive action.

The IAF is quantitatively well equipped in comparison to PAF. The IAF is holding a total of 250 SU-3 MKI aircraft[79] and additionally, possesses Mirage-2000. Both are considered to be air superiority aircraft but IAF failed to target any of the fighter jets of the PAF involved in the action. This fact was a matter of surprise for Indian political and military leadership. The disappointment is evidenced by the statement of Prime Minister Modi who stated that the outcome of the aerial clash between India and Pakistan would have been different if Rafale fighter aircraft were part of the IAF's inventory.[80] Interestingly, IAF was also not capable of efficiently employing the Integrated Air Defence System which is a combination of Israeli Airborne Warning and Control System (AWACS), radars and surface-to-air missiles (SAM). To add up to the disappointment, the Israeli Spyder SAM system shot down its MI-17 helicopter, killing many numbers of security personnel onboard.[81] The incident reflects a lack of training and professionalism in IAF. Moreover, IAF is facing a shortage of aircrew to fly its existing fleet. The pilot-to-aircraft ratio is 1.5 which is significantly less than PAF. Moreover, IAF is holding an inventory of 30 operational squadrons in comparison to the authorized 42 together with the issues of serviceability, logistics and training further aggravate the situation for the IAF.[82] Importantly, IAF suffered the loss of a fighter jet, i.e., MiG-21 Bison, the wreckage of which fell in Pakistani-administered Kashmir together with the downing of its pilot. The IAF continued to insist on shooting down PAF's F-16, a claim that was rejected by the relevant experts and officials based in the U.S.[83] Thus, the dogfight between the IAF and PAF turned out to be in favour of the latter.

During this clash, both Air Forces employed Net-centric Electronic Warfare (NEW) together with the backup support of AWACS and radars. The PAF efficiently employed its electronic warfare that assisted in limiting the efficacy of IAF interceptors on 27 February 2019.[84] The aerial engagement reflected the professional excellence of PAF in a way that it not only competed with a much larger and better-equipped IAF but also over shined it. This is much evident in the statement of ISPR spokesperson, Major General Asif Ghafoor who stated,[85]

> Staying within our jurisdiction, six targets were locked and we carried out the strike. Today's action was in self-defence; we do not want to claim any victory. The way we set out the target and made sure that there was no collateral damage, the inbuilt message was that despite our capability, we look towards peace.

Pakistan in a *tit-for-tat* manner much in line with its newly developed strategy of QPQP responded with an immediate and befitting response. Pakistan retaliated in such a desperate situation by locking and hitting Indian military targets and shooting down Indian fighter jets and capturing one pilot.[86] Clary stated,[87]

> India conducted small military operations but this strategy is very dangerous in nuclearized South Asia. However, India avoided large-scale military operations in the nuclear era and is finding a way to conduct small military operations using air strikes without crossing the border and if crossed very little incursion is made.

The crisis was evidently on the brink of a major war. India reportedly contemplated launching multiple conventional missile strikes inside Pakistan.[88] India also employed a Naval Submarine to enter Pakistani territory on 4 March 2019.[89] Pakistan intercepted India's submarine closer to its territorial waters.[90] Zamir Akram reasserted, 'we have witnessed incursions by Indian submarines during the 2019 Balakot crisis, these submarines were testing Pakistan's detection and interdiction capabilities.'[91] India's such move questions its intentions and NFU policy on moving nuclear arsenals at the early stage of a conventional interaction. In the February 2019 crisis, after an ill-conceived air strike at Balakot, the Indian Prime Minister threatened Pakistan with *Qatal ki Raat* (the night of the murder)[92] which could rapidly lead to the escalation of the conflict to the nuclear level.

Summing up, India has practically manifested its offensive doctrines such as CSD-2004, JDIAF-2017 and LWD-2018 to launch punitive actions against Pakistan thereby risking regional deterrence stability. Although the risk of nuclear conflagration remained extremely low during the Pulwama/Balakot crisis but the episode witnessed the possibility of unprecedented escalation. India and Pakistan not only engaged in air warfare but India's deliberate choice to strike Pakistan beyond Kashmir signalled a willingness to cross new frontiers. Pakistan too had never responded in such a *tit-for-tat* manner in previous crises under the nuclear overhang. During this crisis, India used a combination of coercive diplomatic and military tools as a *compellence strategy*. More significantly, India used aerial surgical strikes, the first of its kind since the 1971 war to compel Pakistan to take action against the alleged terrorist outfits based on Pakistani territory. Correspondingly, in contrast to the past and a much more compulsive mode, Pakistan responded befittingly. Pakistan's retaliation resulted in significant damage to India's conventional superiority and denied the incentive for India to escalate further. It could, therefore, be concluded that during the Balakot crisis, India's *compellence* was overridden by Pakistan's *deterrence by denial strategy*.

Surgical strike stratagem as a new normal?

India's offensive postures can be aptly linked to its desire to become a regional hegemon. The offensive surgical strikes stratagem was first adopted by the U.S. and Israel to maximize their objectives in the Middle East and Africa. The U.S. and Israel implemented their offensive strategy through sophisticated technological prowess and military strength to transform the *Abnormal Act* of breaching states' sovereignty into *a new normal reality* that eventually became a standard pattern of regional politics. The U.S. and Israel considered this strategy to conduct operations against the terrorist outfits which were allegedly operating from their respective territories and/or serving as proxies for other powers.[93] Thus, the U.S. and Israel used their offensive strategy against these states, consequently, blatantly violating their sovereignty.

However, the case of the U.S. and Israel's surgical strikes stratagem in the Middle Eastern region is different from the case study of India and Pakistan for several reasons: One, the nuclear status of the two states and conflict dynamics of the South Asian region are dissimilar to that of Middle East; Two, the military capabilities of U.S. and Israel to launch offensive actions are matchless in comparison to India; Three, Pakistan's defensive capabilities are far much superior to the states that are in confrontation with the U.S. and Israel in the Middle Eastern region; Four, apart from the debate of the military capabilities, in broader terms, the U.S. and Israel failed to achieve their desired goals by launching punitive surgical strikes in the Middle East;[94] Five, the unresolved Kashmir dispute and frequent uprisings against the heavy deployment of the Indian troops there also make the Indian case challenging to adopt an offensive strategy against Pakistan specifically under the nuclear overhang. Thus, the Indian desire to replicate the U.S. and Israel's offensive aerial strikes model in India-Pakistan conflict dynamics seems to be an inappropriate option for now.

India, based on its offensive strategy, conducted a surgical strike stratagem in the aftermath of the Pulwama attack. India's surgical strike was a new pattern of strategic engagement between the two South Asian rivals. Critical analysis of the crisis indicates that there is a hidden methodology in the madness of India's proactive adventurous surgical strike stratagem. The *raison d'être* lies in India's ambition to establish a new normal based on offensive patterns where it desires to establish its hegemony and strategic dominance in the region. India completely negated the logic of nuclear deterrence during the Balakot crisis. In its misplaced belief to introduce 'New-Normal,' India on 26 February 2019 not only breached Pakistan's sovereignty but also shook the theoretical and practical foundation of nuclear deterrence logic thereby undermining the global rules-based order and established norms.

Interestingly, India considered conducting a surgical strike deep inside Pakistani territory to target claimed, alleged terrorist outfits. The IAF

fighter jets violated Pakistan's territorial sovereignty and further, dropped their payloads on the way back. It was more like a symbolic act to establish its conventional superiority in line with its ambition to achieve regional hegemonic status in the region. Importantly, while doing so, India seriously underestimated Pakistan's conventional and strategic capabilities. Consequently, Pakistan in a *tit-for-tat* manner retaliated to India's 'New-Normal' by locking and hitting Indian military targets and shooting down an Indian fighter jet. Pakistan followed the well-established conventional norms of engagement which have evolved over the years and is following the UN charter. Pakistan acted 'Normal' to defend the sovereignty of a state in such a desperate situation. PAF's defensive well planned, calculated response was beyond India's expectations.[95] Without Pakistan's retaliation and matching response to the Indian strike, it would have raised serious questions regarding the credibility of its FSD posture.[96] Nevertheless, Pakistan's befitting response made it clear that there is no space for the establishment of a 'New-Normal' under a nuclear overhang. That is, it is either 'Normal' to accept the logic of nuclear deterrence or 'Abnormal' to reject or negate it. Indeed, Pakistan's befitting response to the Indian offensive seems to have seriously challenged the desire of India to establish a New Normal in India-Pakistan conflictual relations. To sum up, deterrence in the backdrop of Balakot strikes eroded, which was restored but its spirit was challenged. Furthermore, new developments such as the manifestation of Indian offensive doctrines, a new era of counterforce strategies and the advent of disruptive technologies (summarized in the subsequent chapters) point towards new patterns of strategic engagement for the future in form of smart strikes between India and Pakistan.

Pulwama/Balakot strikes and the U.S. as a broker

The U.S. remained a reliable crisis manager between the two states since the nuclearization of the region (as discussed in the preceding chapters). Nevertheless, this time the U.S. gave tacit approval to India for the launch of surgical strikes[97] while remaining a distant observer. The U.S. public support for India throughout the crisis also crystallized Pakistan's perennial fears about Indo-U.S. collusion to undermine Pakistan's interests.[98] Rizwan Zeb commented, 'since the U.S. has considered India as a strategic ally and counterweight to China, it cannot be taken as an honest or impartial broker in South Asia. Balakot crisis is a prime example of this.'[99]

Pakistan's retaliatory air strikes and the downing of the Indian jet modulated the tone and tenor of the U.S. which quickly reverted to its traditional unequivocal prioritization of immediate de-escalation. The U.S. Secretary of State, Pompeo emphasized both parties to 'avoid escalation at any cost.'[100] Further, the international community also understood the gravity of the situation and aligned their messaging with the U.S. in equally unequivocal terms to avoid further escalation of the conflict.[101] Back channel diplomacy

pushed Pakistan to release the Indian pilot as a de-escalation gesture on 01 March 2019. This rational move led to de-escalate the crisis. For instance, Clary is of the view, 'any of the offensive military moves could result in uncontrollable escalation.'[102] He further pointed out, 'if the pilot would have been killed during the dogfight or on the ground by local people, the escalation patterns could have been out of control.'[103] Basrur was of the view that in any case, India has not and will not allow a third party including the U.S. to mediate.[104] However, the U.S. mediation in releasing the pilot and subsequent de-escalation of the crisis indicates the U.S. back-channel role in the India-Pakistan conflict was very much there. Clary responded to a question on the role of the U.S.,[105] 'there is no better crisis manager available than the U.S. Indeed, both China and Russia are not in a position to replace the U.S. in South Asia. India and Pakistan need to understand that the U.S. may [at times] express reluctance in playing a role [as a peace broker] because of its other commitments.'[106] To sum up, initially, the U.S. did play a role from a distance, consequently, its role as a peace broker via back-channel diplomacy to de-escalate the Pulwama/Balakot crisis cannot be ruled out.

Conclusion

India continuously upgraded its war-fighting doctrines with the focus shifting from major and limited wars to small military operations such as surgical strikes. India developed JDIAF-2017 and LWD-2018 reckoned as supplementary doctrines to CSD. The major focus of new doctrines is to conduct surgical strike stratagem based on enhanced punitive actions in terms of depth, effect, sophistication and precision inside Pakistani territory. Importantly, India for a long has searched for space for taking punitive actions against the alleged terrorist outfits based on Pakistani soil; however, the former restrained to implement such an offensive approach due to capability gaps in its CSD. Manifestation of JDIAF-2017 and LWD-2018 as supplementary doctrines to CSD prepares India strategically for the launch of punitive surgical strikes inside Pakistani territory.

In contrast to the previous eras, in line with its ambitious doctrinal changes, India conducted a claimed surgical strike stratagem against Pakistan (which couldn't occur) first across LoC in September 2016 and in the second instance deep inside Pakistan's territory in February 2019 as it tried to establish new patterns of strategic engagement where a breach of the sovereignty of nuclear-capable Pakistan could become a 'New Normal.' India took inspiration from the U.S. and Israel's model, not only in its quest to establish surgical strikes as the New Normal in South Asia but also went dangerously ahead thereby negating the entire logic of nuclear deterrence. Pakistan's befitting response to the Indian offensive seems to have seriously challenged the desire of India to establish a 'New Normal' in India-Pakistan conflictual relations. However, deterrence in the backdrop of Balakot strikes eroded, which was restored. Furthermore, new

developments such as the manifestation of Indian offensive doctrines, a new era of counterforce strategies and the advent of disruptive technologies (summarized in the subsequent chapters) pointed towards new patterns of strategic engagement for the future in form of smart strikes between India and Pakistan.

A critical analysis suggests that contrary to past times, this era witnessed a change in conflict dynamics and war-fighting strategy. India came up with the development of an offensive strategy with the justification to take punitive measures against Pakistan for its alleged involvement in terrorism in the Indian-administered Kashmir and elsewhere in India. In contrast to the past, where the rivals were involved in major and minor wars together with numerous mobilizations of forces, India conducted surgical strikes first of its kind since 1971 against Pakistan. This era covering the period from 2016 to 2019 is different in terms of the scale of violence, frequency and intensity of crises and military strategies. India deployed a *compellence strategy* against Pakistan in line with its offensive doctrines and took punitive measures in the shape of surgical strikes to target alleged terrorist outfits based in Pakistan. In terms of the number of crises, only two crises erupted during this era. India mobilized its forces to pressurize Pakistan which the latter responded in kind. Additionally, India used the tool of *coercive diplomacy* and media campaign to compel Pakistan to take action against the terrorist outfits based in its territory. The evidence suggests that during this time, two crises erupted between the nuclear rivals, however, not a single event converted into a major war. Thus, the scale of violence remained low during this time in comparison to the previous times. Further, India employed the *coercive strategies of compellence* and Pakistan responded with *deterrence*.

Notes

1 Saman Zulfiqar, 'Kashmir: Nature and Dimensions of the Conflict,' *Journal of Current Affairs* 1, nos. 1 and 2 (2016): p. 62.
2 Riaz Muhammad Khan, 'Conflict Resolution and Crisis Management Challenges in Pakistan-India Relations,' in *Investigating Crises: South Asia's Lessons, Evolving Dynamics, and Trajectories*, eds. Sameer Lalwani and Hannah Haegeland (Washington, D.C.: Stimson Centre, 2018), p. 82.
3 Zafar Khan, 'Crisis Management in Nuclear South Asia: A Pakistani Perspective,' in *Investigating Crises: South Asia's Lessons, Evolving Dynamics, and Trajectories,* eds. Sameer Lalwani and Hannah Haegeland (Washington, D.C.: Stimson Centre, 2018), p. 153.
4 See Vijaita Singh, 'Will Give Befitting Reply to Terror Attack: Rajnath,' *The Hindu*, January 2, 2016, https://www.thehindu.com/news/national/Pathankot-terror-attack-Will-give-befitting-reply-to-terror-attack-says-Union-Home-Minister-Rajnath-Singh/article60522844.ece.
5 See 'Indian Defense Minister Blames Pakistan for Attack in India-Held Kashmir,' *DAWN*, June 26, 2016, https://www.dawn.com/news/1267374.
6 Vinay Kaura, 'India's Pakistan Policy: From 2016 "Surgical Strike" to 2019 Balakot "Airstrike",' *The Round Table* 109, no. 3 (2020): p. 281, https://www.tandfonline.com/action/showCitFormats?doi=10.1080/00358533.2020.1760499.

7 See 'Pakistan "Must" Dismantle Terror Networks: Obama,' *The Hindu*, January 24, 2016, https://www.thehindu.com/news/international/US-President-Barack-Obama-interview-with-PTI-at-Washington/article60540429.ece?homepage=true.
8 See 'Pathankot Aftermath,' *Daily Times,* January 6, 2016, https://dailytimes.com.pk/96208/pathankot-aftermath/.
9 Irfan Haider, 'Nawaz-Modi Call: India Urges Pakistan to Act after Pathankot Airbase Attack,' *DAWN*, January 5, 2016, https://www.dawn.com/news/1230945.
10 Abdul Manan, 'Kerry Urges Pakistan, India to Continue Talks Despite Pathankot Attack,' *The Express Tribune,* January 9, 2016, https://tribune.com.pk/story/1024712/kerry-urges-pakistan-india-to-continue-talks-despite-pathankot-attack.
11 Syed Sammer Abbas, 'Pakistan Rejects India's Allegations of Involvement in a Terrorist Attack in Held Kashmir,' *DAWN,* September 18, 2016, https://www.dawn.com/news/1284555.
12 Salman Masood, 'Pakistan Arrests Jaish Militants Over Attack on Indian Air Base,' *The New York Times*, January 13, 2016, https://www.nytimes.com/2016/01/14/world/asia/pakistan-india-pathankot-jaish-muhammad.html.
13 See 'Diplomatic Disaster: Modi Govt under Fire over Pak Report on Pathankot,' *Hindustan Times*, April 6, 2016, https://www.hindustantimes.com/india/modi-govt-under-fire-after-pak-media-claims-pathankot-attack-was-staged/story-IzUQdnhV5VdBoOAicJzIuI.html and Mian Abrar, 'JIT Report Pokes Holes in India's Pathankot Theories,' *Pakistan Today*, April 4, 2016, https://archive.pakistantoday.com.pk/2016/04/04/jit-report-pokes-holes-in-indias-pathankot-theories/.
14 Shafqat Ali, 'Evidence Not Enough, Pakistan Tells India,' *The Nation*, January 12, 2016, https://www.nation.com.pk/12-Jan-2016/evidence-not-enough-pakistan-tells-india.
15 See 'Sushma Swaraj Rules Out Talks with Pakistan, John Kerry Says No Good or Bad Terrorist,' *The Indian Express*, August 31, 2016, https://indianexpress.com/article/india/india-news-india/sushma-swaraj-pakistan-terrorism-john-kerry-india-visit-3004565/.
16 See 'Timeline: How the Kulbhushan Jadhav Saga Unfolded,' *DAWN*, July 17, 2019, https://www.dawn.com/news/1493236.
17 See 'Kulbhushan Jadhav Makes, Second "Confession," Files Mercy Plea before Pakistan Army Chief,' *The Wire*, June 22, 2017, https://thewire.in/diplomacy/kulbhushan-jadhav-files-mercy-petition-before-pakistani-army.
18 See 'Militants Attack Indian Army Base in Kashmir "Killing 17",' *BBC News*, September 18, 2016, https://www.bbc.com/news/world-asia-india-37399969.
19 Rizwana Abbasi and Zafar Khan, *Nuclear Deterrence in South Asia: New technologies and Challenges to Sustaianble Peace* (Oxford: Routledge, 2020), p. 128.
20 Abbas, 'India's Allegations.'
21 See 'Kashmir Attack: Pakistan Hits Back at India Accusations,' *BBC News*, September 19, 2016, https://www.bbc.com/news/world-asia-37405719.
22 See 'Uri Attack Could Be "Reaction" to Situation in Kashmir: Nawaz Sharif,' *The Economic Times*, July 14, 2018, https://economictimes.indiatimes.com/news/defence/uri-attack-could-be-reaction-to-situation-in-kashmir-nawaz-sharif/articleshow/54494539.cms.
23 See 'India Propagating a "Hostile Narrative" about Uri Attack: Pak Army Chief,' *Hindustan Times*, September 19, 2016, https://www.hindustantimes.com/world-news/india-propagating-hostile-narrative-about-uri-attack-pak-army-chief/story-LFHNi2z8BFDPow4xtjMGSM.html.

24 See 'Blood and Water Cannot Flow Together: PM Modi at Indus Water Treaty Meeting,' *The India Express,* September 27, 2016, https://indianexpress.com/article/india/india-news-india/indus-water-treaty-blood-and-water-cant-flow-together-pm-modi-pakistan-uri-attack/.
25 'Revocation of Indus Waters Treaty Can Be Taken as an Act of War,' *DAWN*, September 27, 2016, https://www.dawn.com/news/1286437.
26 Michael Kugelman, 'Why the India-Pakistan War over Water Is so Dangerous,' *Foreign Policy,* September 30, 2016, https://foreignpolicy.com/2016/09/30/why-the-india-pakistan-war-over-water-is-so-dangerous-indus-waters-treaty/.
27 See 'Act of War.'
28 'Violation of Water Treaty Risks War, Senior Pakistan Official Warns,' *Gulf News*, September 27, 2016, https://gulfnews.com/world/asia/pakistan/violation-of-water-treaty-risks-war-senior-pakistan-official-warns-1.1903026.
29 'Revocation of Indus Treaty can be Taken as "Act of War": Pakistan's Sartaj Aziz,' *Hindustan Times,* September 21, 2016, https://www.hindustantimes.com/india-news/pakistan-can-go-to-international-court-of-justice-if-india-violates-indus-waters-treaty-sartaj-aziz/story-YErh1MnpM8qWZv2oiHa8EM.html.
30 Zafar Nawaz Jaspal, *India's 'Surgical Strike' Stratagem Brinkmanship and Response*, p. 75.
31 Syed Sammer Abbas, 'Army Rubbishes Indian "Surgical Strikes" Claim as Two Pakistani Soldiers Killed at LoC,' *DAWN,* September 29, 2016, https://www.dawn.com/news/1286881.
32 Arka Biswas, 'Surgical Strikes and Deterrence Stability in South Asia,' *ORF Occasional Paper* 115 (June 2017): p. 7.
33 Jaspal, *India's 'Surgical Strike' Stratagem*, p. 167.
34 Khan, 'Conflict Resolution and Crisis Management,' p. 92.
35 Amarjit Singh Dulat, Asad Durrani and Aditya Sinha, *The Spy Chronicles: RAW, ISI and the Illusion of Peace* (New Delhi: Harper Collins, 2018), p. 210.
36 Ibid.
37 Ibid.
38 Karthika Sasikumar, 'India-Pakistan Crises under the Nuclear Shadow: The Role of Reassurance,' *Journal of Peace and Nuclear Disarmament* 2, no. 1 (2019): p. 162, https://doi.org/10.1080/25751654.2019.1619229.
39 Ibid, pp. 161–163.
40 See John J. Mearsheimer, 'China's Unpeaceful Rise,' *Current History* 105, no. 690 (April 2006): p. 160, https://www.jstor.org/stable/45318719.
41 Jack Snyder, *Myths of Empire: Domestic Politics and International Ambition* (Ithaca, N.Y.: Cornell University Press, 1991), p. 4.
42 John Mearsheimer, *Tragedy of Great Power Politics*, p. 149.
43 See Press Release, 'Indian Armed Forces Joint Doctrine 2017: A Critical Appraisal,' *Islamabad Policy Research Institute* (February 28, 2018).
44 One of the authors' interview with Basrur.
45 Masood Ur-Rehman Khattak, 'Evolution of New Indian Military Strategy: Implications for Pakistan,' *Margalla Papers Issue-I* (2019): p. 32, https://www.jstor.org/stable/48544286.
46 Jaspal, *India's 'Surgical Strike' Stratagem*, pp. 58–59.
47 Ibid, p. 4.
48 *Joint Doctrine: Indian Armed Forces* (New Delhi 53 Printing Press, E-in-C's Branch, April 2017), p. 3.
49 Jaspal, *India's 'Surgical Strike,'* p. 60.
50 Masood Ur Rehman Khattak, 'The Indian Army's Land Warfare Doctrine 2018: A Critical Analysis,' *Islamabad Policy Research Institute Journal* XX, no. 1 (2020): p. 110.

51 *Indian Army: Land Warfare Doctrine-2018*, p. 13. https://www.ssri-j.com/MediaReport/Document/IndianArmyLandWarfareDoctrine2018.pdf
52 Ibid.
53 Ibid.
54 Rahul Bedi, 'Indian Army Announces New Land Warfare Doctrine,' *Jane's Defense Weekly*, December 21, 2018.
55 Pravin Sawhney, 'New Land Warfare Doctrine Is Not a Credible Deterrent to China or Pakistan,' *The Wire*, December 28, 2018, https://thewire.in/security/new-land-war-doctrine-is-not-credible-deterrent-to-china-or-pakistan.
56 *Land Warfare Doctrine-2018*, p. 13.
57 *Land Warfare Doctrine-2018*, p. 03.
58 *Land Warfare Doctrine-2018*, p. 03.
59 Khattak, 'Land Warfare Doctrine 2018,' p. 123.
60 Khattak, 'Indian Military Modernization,' p. 20.
61 Kaura, 'India's Pakistan Policy,' p. 280, https://doi.org/10.1080/00358533.2020.1760499.
62 Reuters Staff, 'Pakistan Rejects Links to Attack in Indian Controlled Kashmir,' February 15, 2019, https://www.reuters.com/article/india-kashmir-attacks-pakistan-idINKCN1Q32S4.
63 See 'Imran Khan's Offer to Prosecute Pulwama Perpetrators a "Lame Excuse": India,' *The Wire,* February 19, 2019, https://thewire.in/diplomacy/imran-khan-india-pakistan-pulwama.
64 Nayanima Basu, 'Open to Probe, but Will Retaliate if India Attacks: Pakistan PM Imran Khan on Pulwama,' February 19, 2019, https://theprint.in/diplomacy/open-to-probe-but-will-retaliate-if-india-attacks-pakistan-pm-imran-khan-on-pulwama/194982/.
65 See 'India Spurns PM Khan's Olive Branch, Says Offer to Investigate is "Lame Excuse",' *DAWN,* February 19, 2019, https://www.dawn.com/news/1464803.
66 See 'Balakot: Indian Air Strikes Target Militants in Pakistan,' *BBC NEWS*, February 26, 2019, https://www.bbc.com/news/world-asia-47366718.
67 See '19 Minutes, 12 Jets, a Big Target: This Is What the IAF Did in Pakistan While You Were Asleep,' *The Economic Times*, February 26, 2019, https://economictimes.indiatimes.com/news/defence/19-minutes-12-jets-3-targets-this-is-what-the-iaf-did-in-pakistan-while-you-were-asleep/articleshow/68164179.cms.
68 Dev Goswami, 'SPICE-2000: Know All about the Smart Bomb Indian Air Force Used for Balakot Airstrike,' *India Today,* March 5, 2019, https://www.indiatoday.in/fyi/story/spice-2000-indian-air-force-balakot-airstrike-mirage-jets-1470988-2019-03-05.
69 Saima Aman Sial, 'Prologue,' in *Pulwama-Balakot Crisis & Operation Swift Retort,* ed. Saima Aman Sial (Islamabad: CISS Special Issue, 2020), p. 2.
70 Air Cdre Kaiser Tufail, 'Changing Dynamics of Air Warfare in South Asia and Future Challenges for PAF,' in *Pulwama-Balakot Crisis & Operation Swift Retort,*p. 5.
71 See 'India Claim to have Struck "Biggest Training Camp of JeM in Balakot",' *DAWN*, February 26, 2019, https://www.dawn.com/news/1466149.
72 See 'Get Ready for Our Surprise: Pakistan Warns India It Will Respond to Airstrikes,' *The Guardian*, February 27, 2019, https://www.theguardian.com/world/2019/feb/26/pakistan-india-jets-breached-ceasefire-line-kashmir-bomb.
73 One of the authors' interview with Lt. Gen. (Retd.) Tariq Khan, retired Pakistan Army General Officer, on June 5, 2022.
74 See 'PAF to Celebrate Feb 27 as Operation Swift Retort,' *The News, Islamabad*, May 2, 2019, https://tribune.com.pk/story/2286502/paf-celebrates-2nd-anniversary-of-operation-swift-retort-at-ahq.

75 See 'Indian Army Commanders left Brigade HQ "Minutes Before" PAF Bomb Fell in the Compound 27 Feb,' *The Print*, May 27, 2019, https://theprint.in/defence/indian-army-commanders-left-brigade-hq-minutes-before-paf-bomb-fell-in-compound-27-feb/241324/.
76 Mansoor Ahmed and Maimuna Ashraf, 'The Pulwama-Balakot Crisis: A Strategic Assessment,' *Centre for International Strategic Studies Islamabad* VII, no. 1 (2020): p. 7.
77 Tufail, 'Changing Dynamics of Air Warfare,' pp. 5–6.
78 See 'Abhinandan: Who Is the Indian Pilot Captured by Pakistan?,' *BBC,* March 1, 2019, https://www.bbc.com/news/world-asia-india-47397409.
79 Ankit Panda, 'The Sukhoi-30 MKI: India's Two-Front War Ace?' *The Diplomat*, January 1, 2014, https://thediplomat.com/2014/01/the-sukhoi-30-mki-indias-two-front-war-ace/.
80 See 'India's Narendra Modi Lashes Out Over Delayed Fighter Jet Deal,' *Financial Times*, March 3, 2019, https://www.ft.com/content/58825ac8-3d93-11e9-8c2f-30761f19a974.
81 Dinaker Pari, 'How Did an Indian Airforce Mi-17Helicopter Get Shot Down by the IAF?' *The Hindu*, June 2, 2019, https://www.thehindu.com/news/national/how-did-an-indian-air-force-mi-17-helicopter-get-shot-down-by-the-iaf/article27400844.ece.
82 Snehesh Alex Philip, 'Never Mind Balakot, IAF Is Worse Off Than Pakistan Air Force on Pilot Strength,' *The Print*, May 7, 2019, https://theprint.in/defence/never-mind-balakot-iaf-is-worse-off-than-pakistan-air-force-on-pilot-strength/231826/.
83 Lara Seligman, 'Did India Shoot Down a Pakistani Jet? US Count Say No.,' *Foreign Policy*, April 4, 2019, https://foreignpolicy.com/2019/04/04/did-india-shoot-down-a-pakistani-jet-u-s-count-says-no/.
84 Air Cdre (Retd) Kaiser Tufail, 'Pulwama – From Bluster to Whimper,' *Kaiser Tufail Blogspot,* June 1, 2019, http://kaiser-aeronaut.blogspot.com/2019/06/pulwama-from-bluster-to-whimper.html.
85 See '2 Indian Aircraft Violating Pakistani Airspace Shot Down; Pilot Arrested,' *DAWN*, February 27, 2019, https://www.dawn.com/news/1466347.
86 Tufail, 'Changing Dynamics of Air Warfare,' pp. 5-6.
87 One of the authors' interview with Clary.
88 Sanjeev Miglani and Drazen Jorgic, 'India, Pakistan Threatened to Unleash Missiles at Each Other: Sources.' *Reuters*, March 17, 2019, https://www.reuters.com/article/india-kashmir-crisis-page-idINKCN1QZ0F1.
89 Jaspal, *India's 'Surgical Strike' Stratagem,* p. 137.
90 Naveed Siddiqui, 'Pakistan Navy Foils an Attempt by Indian Submarine to Enter Pakistani Waters,' *DAWN*, March 5, 2019, https://www.dawn.com/news/1467778.
91 One of the author's interviews with Zamir Akram.
92 Kamran Yousaf, 'Pakistan Denounces Modi's Nuclear Threat as "highly unfortunate and irresponsible",' *The Express Tribune,* April 22, 2019, https://tribune.com.pk/story/1956656/pakistan-flays-modis-irresponsible-war-rhetoric.
93 Imran Iqbal, 'India's New-Normal,' *The News*, March 7, 2019.
94 George Perkovich and Toby Dalton, 'Modi's Strategic Choice: How to Respond to Terrorism from Pakistan,' *The Washington Quarterly* 38, no. 1 (2015): p. 25, https://doi.org/10.1080/0163660X.2015.1038172.
95 Jaspal, *India's 'Surgical Strike*,' p. 151.
96 Ahmed and Ashraf, 'The Pulwama-Balakot Crisis,' p. 5.
97 Kaura, 'India's Pakistan Policy,' p. 201.

98 Moeed Yusuf, 'The Pulwama Crisis: Flirting with War in a Nuclear Environment,' *Arms Control Association,* May 2019, https://www.armscontrol.org/act/2019-05/features/pulwama-crisis-flirting-war-nuclear-environment.
99 One of the authors' interview with Rizwan Zeb, Associate Professor and DS (Research) Air War College Institute, Karachi, June 14, 2022.
100 See Press Release 'Statement by Secretary Pompeo: Concern Regarding India-Pakistan Tensions,' *U.S. Embassy and Consulates in Pakistan,* February 27, 2019, https://pk.usembassy.gov/statement-by-secretary-pompeo-concern-regarding-india-pakistan-tensions/.
101 See 'Major World Powers Ask India, Pakistan to Avoid Further Military Action,' *Business Standard*, February 27, 2019, https://www.business-standard.com/article/pti-stories/major-world-powers-ask-india-pak-to-exercise-utmost-restraint-119022701134_1.html.
102 One of the authors' interview with Clary.
103 Ibid.
104 One of the authors' interview with Basrur.
105 One of the authors' interview with Clary.
106 Ibid.

4 Changing Patterns of Warfare: March for Counterforce Posturing

Introduction

India and Pakistan used Brute Force to resolve the crises in the pre-nuclear era; however, both rival states used coercion (compellence and deterrence) in the post-nuclear age. India acquired nuclear weapons and pursued a doctrinal policy of minimum deterrence and NFU. India's gradual force modernization and technological advancement depict transformation in its doctrinal postures such as a possible shift from NFU to FU or counterforce temptations that contradict the policy of minimum deterrence or assured retaliation. Basrur opines that India, in the wake of terrorist events, has shifted its policy from deterrence to compellence. He claimed that the attack 'seems to have opened the door to an open-ended future in which a minimalist conception of deterrence will no longer be the solitary plank of nuclear policy.'[1] The compellence strategy is considered to contradict the policy of NFU and minimum deterrence[2] that India originally conceptualized.

India's manifestation of conventional, offensive/war-fighting doctrines and Pulwama/Balakot strikes (as discussed in the preceding chapter), its limited use of military force based on compellence strategy raises questions such as whether India's offensive actions depicts any change in its nuclear doctrinal posture and military strategy. The strategic environment in South Asia is changing against the backdrop of dramatic military developments and doctrinal upgradations, as discussed in Chapter 2. The evolution of India's conventional doctrines, such as CSD, JDIAF-2017 and LWD-2018 (discussed in Chapter 3) and growing nuclear efficiency and sufficiency (discussed in Chapter 2) triggers a new debate on a possible shift in its nuclear doctrinal policy and nuclear targeting strategy towards Pakistan. To hedge against a pre-emptive counterforce strike, Pakistan might be forced to increase the number of its warheads and missiles and disperse/pre-delegate the authority to use nuclear weapons. Thus, this chapter attempts to understand the rationale behind the possible shift in India's nuclear posture. This chapter assesses how India can launch counterforce/disarming first strikes in a crisis. What are the drawbacks of this policy shift and how it leads to

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creating an arms-racing problem and stress for regional deterrence stability? How would this doctrinal shift impact regional conflict dynamics and patterns of warfare between India and Pakistan?

India's march for counterforce posturing

After enhanced nuclear learning for the two decades of nuclearization in South Asia, India's nuclear strategy appears to be transforming and 'becoming dynamic compared to what India conceptualized in its earlier doctrine of 2003.'[3] The IND, which was operationalized in January 2003, underlined India's commitments to adherence to the policy of CMD and nuclear NFU. Arguably, India embraced the CMD policy to display a normative attitude, illustrating that India has aims no other than security; therefore, minimum could serve its strategic purpose. Notably, India's massive retaliation policy was always shrouded deep in ambiguity. India aimed at accumulating more power through the modernization of deterrent forces under the shadow of a massive retaliation policy. India aimed at achieving a sufficient and efficient number of weapons to maintain its doctrinal posture and preserve the credibility of deterrence to regulate adversary's behaviour.

Thus, India's nuclear adequacy, deterrent force modernization and the manifestation of its conventional, offensive doctrines (discussed in the preceding chapters) have led to revolutionizing Indian military thinking. India's existing IND seems to be transforming now as the internal debate on restructuring India's nuclear strategy begins to inflame Indian security leadership to launch the pre-emptive first strike on Pakistan without even infuriating Pakistan into using its nuclear weapons first.[4] India is strategically thinking of moving away from the original conception of minimum deterrence and NFU to a war-fighting, counterforce/pre-emptive/disarming first-strike posture against Pakistan if not China. Indeed, India, from the outset, aimed to fight a two-front war with China and Pakistan while neutralizing Pakistan early in the conflict.

The argument holds that India's early ballistic missile systems lacked the accuracy and precision to hit targets smaller than a city; therefore, Pakistan's major cities became the prime target of India's nuclear-armed missiles under the rubric of a massive retaliation policy. As technology in India advanced with improved missile accuracy, the targeting of Pakistan's military facilities and nuclear force, such as missile silos, command and control and communication centres came under deliberations for such attacks through counterforce posturing. India's security personnel propagated repeatedly[5] that counterforce options against Pakistan are doctrinally acceptable and strategically advantageous.[6] This leaves no blurred line that in the backdrop of its technological modernization, India's intentions for embracing such a strategy of counterforce, disarming strikes against Pakistan is real and deliberate, which pushes India towards a more assertive direction.'[7] The core nuclear doctrinal elements may be evolving based on

the following conceivable factors: one, the possible shift from NFU to FU option; reconsideration of CMD policy; and transformation from massive retaliation/counter-value to flexible response/counterforce targeting policy.

The contention is that India is moving away from non-war-fighting to a war-fighting strategy to exert more pressure and stress on Pakistan's nuclear deterrence force thereby triggering a new arms race. One of the senior Pakistani retired military officials stated, 'India has just constructed the narrative of NFU, in practical terms, it is pursuing nuclear FU policy.'[8] Indian officials, time and again, expressed the use of pre-emptive strikes against Pakistan. What does it mean? Is it indicative of its FU policy against Pakistan in real terms? Indeed, the policy of NFU remained the backbone of India's nuclear doctrine from the outset. However, India's high-profile elites now conceptualize and desire pre-emptive first strikes against Pakistan. Khan argues,[9]

> Although India still officially maintains that it follows NFU, there is strong evidence in the existing literature that India is likely to depart away from its so-called NFU to FU where it could be able to use its nuclear forces in the event of serious military crises. Such offensive modification could further undermine strategic stability in South Asia.

Christopher Clary and Vipin Narang argue that the new development in nuclear doctrine is the correct assessment of the fact in a way that India is exploring and developing the options to efficiently target Pakistan's strategic nuclear systems.[10] In the 2017 Carnegie International Nuclear Policy Conference, Narang argued, 'serious revision of Indian nuclear doctrine may be in the offing - even to the extent of entertaining pre-emptive strikes against Pakistan's nuclear deterrent.'[11] Zeb argues, 'the general view, at least in Pakistan is that it is. Also, note that such policies are mostly for peacetime and diplomatic purposes. How exactly India materializes such a policy in the fog of war is a different thing.'[12]

Statement of Shivshankar Menon, former National Security Advisor of India, also indicates, 'India will not allow Pakistan to go first,'[13] an initiative that points to disarming Pakistan from its nuclear weapons. He further stated, 'if Pakistan were to use tactical nuclear weapons against India, even against Indian forces in Pakistan, it would effectively be opening the door to a massive Indian first strike, having crossed India's declared red lines.'[14] Additionally, Menon has warned that the strategic shift in the Indian doctrine to a nuclear war-fighting posture may lead to an arms racing problem instead of enhancing the effectiveness of deterrence stability.[15] Michael Krepon rightly argued, 'India and Pakistan have fulfilled the requirements of counter-value targeting and are moving down the path of counterforce targeting requirements,'[16] which is a highly destabilizing development for deterrence stability. The development and subsequent implementation of these war-fighting strategies could undermine the strategic stability in South

Asia. Haleema Saadia commented on the impact of evolving doctrines on strategic stability by stating,[17]

> India's military doctrine is increasingly focused on launching swift action and achieving its battle objectives in a short time without triggering Pakistan's nuclear threshold. This implies that India is building a force posture that relies on battle-ready armed units which can be deployed in a short period. India's arms acquisition in the last decade is geared toward fulfilling this doctrinal role.

She further said,

> These trends in India's military doctrine and force modernization negate the principles of strategic stability. To maintain strategic stability, the concerned parties need to avoid triggers that can lead to armed conflict and maintain force postures that stabilize deterrence. Both these considerations are negatively affected by India's evolving war-fighting doctrines. This makes the initiation of armed hostilities more likely in South Asia.

The offensive doctrinal evolution signifies the Indian military's influence in creating options for limited war, which, in turn, put pressure on Pakistan to rely more on nuclear weapons for deterrence purposes, if not war-fighting. Clary, while responding to a question on Indian nuclear policy, said, 'the Indian nuclear policy may change in future, but I suspect they are comfortable with ambiguous nuclear posture. India may continue with NFU or switch to FU, but to be clear, it has the option to go for FU in specific circumstances.'[18] Basrur is of the view that occasional doubts have been raised, but nothing serious is going to happen concerning change in India's nuclear posture.[19]

The question arises on the Indian doctrinal changes at the conventional level that are in synchronization with its nuclear doctrines, as highlighted above. Khan, when asked to comment on the compatibility between India's conventional offensive doctrines and nuclear doctrine/postures, stated, 'conventional forces always remain compatible with nuclear forces. India surely could be thinking of strategizing its conventional forces to complement its modernized nuclear forces.'[20] Indeed, there are various compulsions for India to adopt an FU, counterforce option: One, shifting political and economic trends from Europe to Asia have strategically placed India in an advantageous position, thereby bolstering its strategic confidence as a regional hegemon. India's growing political profile and its hedge against China have deepened its trust and convergence of strategic interests with the U.S. Thus, India appears to have built up the self-confidence to take strategic adventure against Pakistan; Two, India's new role in Asia has allowed it to secure NSG waiver and create footprints in the global technological

market to procure cutting-edge technologies. Against this backdrop, India has achieved nuclear sufficiency and supremacy against Pakistan.[21] The NSG waiver has allowed India to achieve nuclear efficiency, effectiveness and accuracy that may practically lead India towards the adoption of a dangerous war-fighting, pre-emptive deterrent force posture. Thus, technological advancement and improved accuracy of delivery systems seemingly have created more space for India to review its targeting policy and contingency operations to engage Pakistan's nuclear forces and C4I2SR facilities. India's slightly improved capability bolsters its strategic confidence towards a pre-emptive first strike to neutralize Pakistan's low-yield weapons. Three, India aims to become more assertive to hold escalation dominance in South Asia in a crisis. Four, India aims at dragging Pakistan into a deliberate arms racing problem, aggravating power asymmetry that, in turn, could exploit Pakistan's vulnerabilities by inflicting painful and unbearable psychological impact and resource burden on its already crippling economy.[22]

Strides India has embraced for counterforce posturing

India is acquiring new stealth technologies to enhance the ability of IAF to penetrate deep into the territory of an adversary.[23] Stealth technology allows full penetration to an optimal launch point and helps ensure the survivability of the aircraft and crew during the mission.[24] The combination of weapon lethality gained by accuracy and bombers' survivability due to stealthiness maximizes the counterforce capabilities of the IAF. India is indeed seriously working on achieving supremacy to dominate the air domain,[25] especially after the Balakot strikes between India and Pakistan.[26] India is working on enhancing its intelligence, surveillance and reconnaissance technologies and satellite sensors. A range of technologies is being developed such as seismometers and gravimeters to map the electromagnetic field of size and remote-type sensors.[27] More so, India's deterrent force modernization such as ballistic missile defence systems, MIRVs technologies, nuclear-powered submarines with all types of ranges of SLBMs, its upgrading plans to achieve submarines survivability and anti-submarine warfare (ASW) exercise in the IOR significantly reflect India's direction towards comprehensive counterforce war-fighting strategy.[28] More so, India's technologies such as precision conventional strikes and cyber operations (discussed in the subsequent chapter), enhancement in the accuracy of existing missile systems, advancement in its sea-based intelligence, navigation and guidance system, advancement in its sensors platform, acquisition of UAVs and SAR satellite systems are the visible indicators that suggest India is opting for a counterforce strategy. Accuracy and speed with hypersonic missiles can help India with the successful launch of a counterforce first strike. Confidence about the interception of any residual Pakistani nuclear missiles by BMDs may give India a false sense of security and prompt it towards adventurism.

India's focus on missile accuracy and readiness plans further shows its aim to peer deep into Pakistan's territory[29] while making frequent observations of its critical area. The SAR platform is critical in detecting adversary's silos based arsenals, road-mobile moving targets, their speed and directions of mobility in the future. Nagal[30] wrote in 2015 that one method of India's response to the adversary's decision to launch a nuclear attack would be to strike the command and control system of the opponent to preclude the possibility of further missions for nuclear strikes. This is indeed attainable if all possible moves are adopted to abolish the enemy's C4ISR system and leadership. For this India has to rely on the procurement of more weapon systems, a sufficient delivery system with pinpoint accuracy, alert mode of arsenals while delegating power to the field commanders with heavy reliance on MIRVs and BMD systems to survive such a disarming first-strike attack.

Cracks in India's counterforce posturing

The question here arises, is India capable of disarming Pakistan completely by launching the first strike? The advent of new technologies indeed leads to an increase in Pakistan's vulnerabilities ultimately destabilizing regional deterrence. Counterforce posture will add value to the Indian posture amid the crisis if it threatens Pakistan to escalate the crisis. The precision technologies, along with navigation and guidance system, have to be improved with increased accuracy of missile systems, for such as strategy. 'The growing sophistication of Indian counterforce capabilities is still way behind the ability to negate the threat of Pakistani retaliation because existing Indian counterforce capabilities could facilitate crisis bargaining and damage limitation, but they cannot be supposed to facilitate a complete disarming strike against Pakistan.'[31] To build the above logic, it's important to understand that there are three basic strategies to defend nuclear arsenals from the enemy's targets: (a) *hardening* – this deals with the deployment of C2 systems and force structures that are protected from nuclear blasts or detonations. These are usually kept underground such as C2 systems, missile silos, protective sites and hardened shelters for aircraft; (b) *concealment* – this protects weapon systems from adversary's surveillance and detection; and (c) *redundancy* – this creates difficulties for the adversary's targeting plans by not only developing diversified delivery systems but by deploying them in multiple locations. All three operational plans are interlinked and produce a synergistic effect for desirable survivability.[32]

It goes without saying that despite India's ambitious strategic thinking, its counterforce temptation suggests the dangerous characteristics of nuclear forces. The capabilities that India requires for a successful counterforce strike are: (a) accurate information on the location of the adversary's weapon system, their production and storage facilities and missile launchers; (b) clarity on how can adversary's assets are successfully engaged;

(c) pinpoint assessment of precision and timings to successfully engage the road mobiles or relocatable targets of the adversary; (d) clarity on destroying and disabling the enemy's targets while minimizing collateral damage and keeping out the non-combatants; and (e) a rational analysis and assessment on the consequences of such a strike.

For a counterforce launch, a state needs to possess great technological targetable accuracy. Counterforce units require precision-guided munitions (PGMs) to engage the target.[33] The ideal counterforce strike minimizes the timeline between a decision to initiate a strike and an assessment to engage the target. Counterforce weapons should penetrate untouched to the target, thereby withstanding all-weather precision, operate from extended range if necessary, to be present continuously over likely target sets to reduce the sensors to the shooter to target times.[34] Several areas demand particular attention such as the revolution in accuracy, stealth penetrating warheads, other hard target defeat tools, various programs to track and destroy silos and mobile missile launchers.[35] India yet has considerable gaps in its deterrent force capability at present, but India may be closely working on mitigating the counterforce strike capability gaps to make disarming first-strike credible against Pakistan.

The gap in Pakistan's deterrent capability and impact on crisis dynamics

How vulnerable is Pakistan's deterrence capability? How can the Indian counterforce strategy impact crisis dynamics and warfare? What future steps should Pakistan adopt to neutralize India's counterforce capabilities in a time of war? The contention is that India's weapons will continue to grow, censors will improve and counterforce strategies will, in turn, be beneficial to India while costly to Pakistan. Nuclear forces, in the wake of counterforce strategies, have become more vulnerable and weapon systems unsafe than ever before.[36] India's remote sensing and early warning system have made it more dangerous as Pakistan may face difficulties to protect its arsenals such as in the form of guidance systems, sensors, data processing, communication, AI and a host of other products of the computer revolution. The disruptive technologies will continue to make progress, thereby complicating the C2 systems (discussed in the subsequent chapter). Confronted with India's hypersonic missiles, accurate sensing technologies and the threat of pre-emption, Pakistan will be faced with 'use it or lose it' dilemma during crises, especially in the absence of any crisis stability mechanisms. Pakistan might decide to increase the number of its warheads and missiles to overcome interruption by the Indian BMDs. This will lead the two states to an unending arms racing problem. Moreover, to hedge against a pre-emptive counterforce strike, Pakistan might also be forced to disperse and pre-delegate the use of nuclear missiles. This will lead to new risks of unauthorized use and loss of control thus adding more stress to strategic stability.

The counterforce era will leave nuclear delivery systems more vulnerable in the future. Pakistan's arsenals that are survivable today may become vulnerable in the future if Pakistan fails to grapple with the changes occurring on the Indian side. States pursue various approaches to mitigate the vulnerability of their nuclear arsenals against probable first strike including *hardening*, *concealment* and *redundancy* capabilities.[37] Pakistan has to improve research and development with all its modest resources to strengthen these capabilities. Pakistan has to place its weapons, production facilities, storage facilities and command and control assets inside hardened and, at times, further deeply buried facilities. Clary on responding to Pakistan's preparedness vis-à-vis India's doctrinal changes and force modernization stated,

> I believe that Pakistan has a lot of options to preserve the second strike. However, Pakistan is required to build silos, and develop more warheads and MIRVs to deter India. India will not allow Pakistan to strike Indian cities first. Further, the nuclear weapons nullified major wars however, India would like to conduct small offensive operations against Pakistan for which the latter is required to maximize its conventional and strategic capabilities to prevent the former from going offensive against it.

Pakistan needs to improve its persistent and mission-dedicated ISR capabilities to locate the enemy's mobile missile launchers. Pakistan has to focus on improving its existing ability to pre-emptively target suspected enemy sites or potential hidden sites. Pakistan should continue to organize, train and equip joint air assets, ISR assets and ground assets for this role. Pakistan's C2 system needs to include rapid data exchange between platforms, automated battle management tools for data fusion, target tracking and tasking to dynamic battle management integrated fire control of service platforms. Night-time ISR coverage and more attack aircraft, surveillance, limited sensor capabilities persistent 24/7 ISR coverage and enough attack aircraft would be needed. The WMD database maintenance, target planning and assessment tools, weather modelling, survivability assessment, hazard prediction, force protection assessment and structural response management weapons are relevant aspects for consideration.

Pakistan is compelled to develop effective countermeasures to the full spectrum of emerging means of Indian counterforce. This means that a need for an increased weapons system cannot be overlooked as counterforce inherently is destabilizing. This would entirely depend on Pakistan's economic revival and growth in years to come. Indeed, India's march for counterforce is entangling the South Asian region in redundant nuclear arms racing, and it will probably lead to risky crisis instability and risky escalation during a crisis. These changes are eroding the foundation of deterrence, thereby making war more likely and crises frequent. It seems that Pakistan will make a timely and sensible move to overcome future risks

and challenges: (a) by preventing the possibility of eruption of crisis and (b) by minimizing incentives for India to implement its counterforce/disarming first strikes against Pakistan.

Conclusion

India's nuclear strategy appears to be transforming and becoming dynamic compared to what India conceptualized in its earlier doctrine of 2003. Thus, India's nuclear adequacy, deterrent force modernization and the manifestation of its conventional, offensive doctrines (discussed in the preceding chapters) have led to revolutionizing Indian military thinking. India is strategically moving away from the original conception of minimum deterrence and NFU to a war-fighting, counterforce/pre-emptive/disarming first strike posture against Pakistan to neutralizing the latter early in the conflict. Thus, the shift in India's force posture is visible and predictable. This shift in the nuclear doctrinal postures has created serious deterrence stability challenges: One, India's military modernization and changing force postures increase Pakistan's insecurities and its reliance on deterrence. Thus, the counterforce war-fighting strategies will lead to aggravating arms race that, in turn, will yield destabilizing and irreversible effects. This vicious cycle of an arms race would worsen by creating a deeper crisis for regional-centric deterrence soon if not amicably controlled. Two, the temptation for counterforce strategies will lead to turning states' weapons systems to high-alert mode thus promoting risks of unauthorized use. This will make these states' weapon systems unsafe and vulnerable. Three, risks of accidental use of nuclear weapons and miscalculation will rise, hence promoting the 'use it or lose it' dilemma during crises, especially in the absence of any crisis stability mechanisms. Four, counterforce temptation will lead the two states to intense security-dilemma-driven arms competition. Five, the states' broken channels of communication after the Pulwama/Balakot crisis, conventional force disparity and frequent border skirmishes in the region can aggravate negative threat perceptions of one against the other. Threat perceptions usually are a function of power asymmetries that, in turn, trigger intergroup conflicts. Six, states' interference in others' territories through proxies, insurgencies and non-state actors, political rhetoric like propaganda, hate speech and competing or irreconcilable narratives breed misunderstandings that could escalate to unprecedented levels of confrontation between the nuclear possessor states. Seven, counterforce strategies will create a crisis of trust and uncertainty for the resumption of CBMs in the absence of regional arms control arrangements. Finally, the offensive war-fighting strategies and counterforce postures will make war likely and deterrence vulnerable.

To sum up, the two states are working against the spirit of deterrence theory, which will make crisis stability hard to achieve. The two states should initiate an environment to understand their rivalries and conflicts, bilateral

asymmetries and threat perceptions that compel them towards a doctrinal modification. Therefore, India and Pakistan need to open a bilateral constructive dialogue to strike a comprehensive bilateral mechanism to reduce mistrust, prevent prospects for an accidental war and promote an arms control mechanism, thereby accommodating each other to avoid miscalculation, confrontation and war-fighting doctrinal strategies on the lines suggested in Chapter 6 of this volume.

Notes

1 Quoted in Rajesh Rajagopalan, 'India's Nuclear Doctrine Debate,' *Carnegie Endowment for International Peace*, June 30, 2016, https://carnegieendowment.org/2016/06/30/india-s-nuclear-doctrine-debate-pub-63950.
2 Rajesh Basrur, *Minimum Deterrence, and India's Nuclear Security* (Stanford, C.A.: Stanford University Press, 2006), p. 100.
3 Abbasi and Khan, *Nuclear Deterrence in South Asia: New Technologies and Challenges to Sustainable Peace,* p. 70.
4 See Toby Dalton and George Perkovich, *India's Nuclear Options and Escalation Dominance* (Washington, D.C.: Carnegie Endowment for International Peace, May 2016), https://carnegieendowment.org/files/CP_273_India_Nuclear_Final.pdf.
5 See Michael Krepon, 'The Counterforce Compulsion in South Asia,' *Arms Control Wonk,* April 12, 2017, https://www.armscontrolwonk.com/archive/1203018/the-counterforce-compulsion-in-south-asia/.
6 See Shivshankar Menon, *Choices: Inside the Making of India's Foreign Policy* (Washington, D.C.: Brookings Institution Press, 2016).
7 Shashank Joshi, 'An Evolving India Nuclear Doctrine,' in *Deterrence Instability and Nuclear Weapons in South Asia*, eds. Michael Krepon, Joshua T. White, Julia Thomson and Shane Mason (Washington, D.C.: Stimson Center, 2015), p. 93.
8 One of the authors' interview with Lt. Gen. Naeem Khalid Lodhi, retired Pakistan Army General Officer and former Defence Secretary, on June 5, 2022.
9 One of the authors' interview with Zafar Khan.
10 Christopher Clary and Vipin Narang, 'India's Counterforce Temptations: Strategic Dilemma, Doctrine, and Capabilities,' *International Security* 43, no. 3 (2019): p. 08, https://doi.org/10.1162/isec_a_00340.
11 Krepon, 'Counterforce Compulsion in South Asia'; and for further details, see discussion on 'Plenary – Beyond the Nuclear Threshold: Causes and Consequences of First Use,' *Carnegie Endowment for Peace*, March 20, 2017, https://carnegieendowment.org/2017/03/20/plenary-beyond-nuclear-threshold-causes-and-consequences-of-first-use-pub-64779.
12 One of the authors' interview with Zeb.
13 See Shivshankar Menon, *Inside the Making of Indian Foreign Policy* (Washington, D.C.: Brookings Institution Press, 2016).
14 Ibid.
15 Ibid.
16 Krepon, 'The Counterforce Compulsion.'
17 One of the authors' interview with Haleema Saadia, academician and former Assistant Director of Arms Control and Disarmament Affairs Branch at Strategic Planning Division, June 2022.
18 One of the authors' interview with Clary.
19 One of the authors' interview with Basrur.

20 One of the authors' interview with Zafar Khan.
21 India has not segregated military and civilian nuclear facilities, while 8 out of 22 reactors rest outside the International Atomic Energy Agency's safeguard system. For more details, see Mansoor Ahmed, 'Nuclear Exceptionalism.'
22 Clary and Narang, 'India's Counterforce Temptations,' pp. 39–40.
23 Dmitry Stefanovich, 'Nuclear Posture and Technology Trends in South Asia and Ways Ahead,' *National Security Journal* 3, no. 4 (2022): pp. 3–4, https://doi.org/10.36878/nsj20220301.11.
24 Barry R. Schneider, *Counterforce Targeting Capabilities and Challenges* (Maxwell Air Force Base, AL: Air University, August 2004), p. 7.
25 Christina Goulter and Harsh V. Pant, 'Realignment and Indian Airpower Doctrine,' *Air University,* January 2, 2020, https://www.airuniversity.af.edu/Wild-BlueYonder/Articles/ArticleDisplay/Article/2007488/realignment-and-indian-airpower-doctrine/.
26 Naeem Salik, 'Nuclear Signaling during the Pulwama – Balakot Crisis 2019,' in *Pulwama-Balakot Crisis and Operation Swift Retort 27 February 2020*, ed. Saima Sial (Islamabad: CISS Special Issue, 2020).
27 Amjad Mahmood and Adil Sultan, 'Impact of India's ISR Capabilities on South Asian Security Dynamics,' *Strategic Studies* 41, no. 4 (2021): pp. 17–39.
28 Zafar Khan, 'Conceptualizing India's Evolving Nuclear Strategy under the Essentials of Minimum Deterrence: Limitations and Challenges,' *Comparative Strategy* 39, no. 6 (2020): p. 588, https://www.tandfonline.com/action/showCitFormats?doi=10.1080/01495933.2020.1826864.
29 For details, see Clary and Narang, 'India's Counterforce Temptations.'
30 Balraj Nagal, 'India's Nuclear Strategy to Deter: Massive Retaliation to Cause Unacceptable Damage,' *CLAWS Journal* (Winter 2015): p. 13.
31 Iftikhar Ali and Jatswan S Sidhu, 'India's Doctrinal Modifications Counterforce Temptations in South Asia,' *Journal of Asian and African* 57, no. 3 (2022): p. 14, https://doi.org/10.1177/00219096211019075.
32 Kier A. Lieber and Daryl G. Press, *The Myth of Nuclear Revolution: Power and Politics in the Atomic Age* (Ithaca, N.Y.: Cornell University Press, 2020), p. 68.
33 Schneider, *Counterforce Targeting Capabilities*, pp. 2–3, and Samran Ali, 'India's Growing Counterforce Capabilities,' *STRAFASIA,* June 8, 2019, https://strafasia.com/indias-growing-counterforce-capabilities/.
34 For more details, see Clary and Narang, 'India's Counterforce Temptations.'
35 Ibid.
36 Sufian Ullah, 'SAV Review: The New Era of Counterforce in South Asia,' *South Asian Voices,* January 10, 2020, https://southasianvoices.org/sav-review-the-new-era-of-counterforce-in-south-asia/.
37 Aqeel Akhtar and Sufian Ullah, 'India's Sea-Based Nuclear Forces and Strategic Stability in South Asia,' *Australian Journal of Maritime & Ocean Affairs* (2021): p. 3, https://doi.org/10.1080/18366503.2021.1961352.

5 Disruptive Technologies: Deterrence Erosion and New Warfare Domain

Introduction

The world is experiencing a fourth industrial revolution in which a wave of new and disruptive technologies is being developed. New technologies always had transformative effects on warfare and military thinking.[1] There is a correlation between geopolitical settings and technological evolution, which in turn has undermined warfare's tactical, operational and strategic levels. Doctrines and strategies crafted and implemented in the previous decades seem to become obsolete. It is not only the technologies that undermine doctrines, destabilize deterrence and survivability of nuclear force but also geopolitical settings and states' status-driven ambitions that compel them to include these technologies in existing inventory for their advantage.

The great powers' ambitions to develop disruptive technologies for the maximization of their security gains have led to creating complications for the regional strategic stability of South Asia. For example, the U.S.-China competition in this field has significantly altered the security dynamics of South Asia, where a renewed Indo-U.S. strategic alliance to offset China has, in turn, created security challenges for Pakistan (discussed in Chapter 2). In this context, India's quest for disruptive technologies may further lead to the deterioration of the strategic settings of South Asia. India's growing technological advancement and requisite doctrinal transformation amidst changing global and regional political systems are threatening the deterrence stability of South Asia.

Indeed, for more than 20 years, nuclear deterrence led to stabilizing effects at the strategic level between India and Pakistan, where neither side had the incentive to initiate a nuclear first strike. Both the rival states successfully managed to avoid major wars due to nuclear deterrence. However, the induction of disruptive technologies carries the potential to alter the conflict dynamics and character of warfare[2] where total war/s might not be possible, but smart wars may become technologically permissible and strategically advantageous.

All new technologies that are included in weapon inventory for combat are called disruptive. These technologies are disruptive in the sense that they aim

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to change the status quo to their advantage once fielded on the battlefield. Some[3] have warned that advances in AI could erode the fundamental logic of nuclear deterrence by enabling counterforce attacks against concealed and mobile nuclear forces. The existing body of literature[4] suggests that these disruptive technologies could erode the foundation of deterrence, thereby undermining nuclear strategic stability through its effects on nuclear second strike capability including C4ISR and force postures. The impact of these technologies on nuclear deterrence correlates to the capacity of technology relating to its operationalization and understanding of the force postures of the states against which it may be fielded. Advances in new technologies have made nuclear forces more vulnerable by providing confidence to the first mover, thereby increasing the risk of a first-disarming strike in a crisis. Simultaneously, leaders fearing disarming first strikes may choose to launch nuclear weapons first before losing them. More so, new technologies will contribute to accidental or inadvertent nuclear escalation by threatening dual-use C2 assets in space and cyberspace or by squeezing time for decision-makers as they may choose the nuclear use option under the false belief that an enemy's nuclear attack is imminent. In this context, certain technologies that have undermined doctrinal strategies and deterrence stability are disruptive technologies that include artificial intelligence, hypersonic weapons, AI-enabled LAWS drones, space-based technologies and cyber technologies. This chapter primarily focuses on the question such as how disruptive technologies will gain direct/indirect future military control, hence challenging the existing status quo and deterrence stability and thereby eroding the foundation of nuclear deterrence between India and Pakistan.

AI and machine learning

AI and machine learning are a few of the major technological advancements that have a significant impact on the strategic environment in contemporary times. AI is a broader concept while machine learning could be reckoned as a subset of it. For instance, AI enables machines to solve problems with human-like qualities and it has numerous techniques where the most significant is machine learning, which trains algorithms to categorize uniformities in piles of available data, and reinforces learning in which a program designed with a feedback mechanism, is rewarded on the actions it carries out.[5] AI could also be employed to rapidly sort through vast quantities of data, improving intelligence, surveillance and reconnaissance while making it easier to target adversary forces. AI constitutes coding, computer systems and software capable of performing tasks that require intelligence if undertaken by humans. It is not one separate system but something that can be applied in many different ways depending on the particular task.

The focus on AI in the research domain cannot be marked accurately; however, it is traced back to the 1940s. AI as an academic discipline emerged

and was established in the 1950s and it continued to be a field of relative scientific obscurity and limited practice for a period of almost more than a half-century.[6] Nevertheless, AI technologies developed rapidly and spread across the globe at a much faster pace in recent times.[7] AI is likely to impact all sectors of life including warfare.[8] This revolutionary technological innovation has introduced a significant level of autonomy in warfare.

AI-led weapons can be categorized as *autonomous* or just *automated*.[9] For instance, to achieve a task, human delegate power to a man or a machine without dictating actions to achieve the desired goals, thus the entity performing the task has some degree of autonomy. If the task is dictated based on a set of rules, the entity performing the task holds 'low autonomy' and describes it as 'automated.' If the entity performing the task is empowered to proceed without rules or boundaries, it is described as fully 'autonomous.' Nearly all tasks that AI-led machines perform fall under these two categories. AI is further distinguished between *autonomy-at-rest* and *autonomy-in-motion*.[10] Autonomy-at-rest means that systems operate in software or the virtual world, whereas autonomy-in-motion describes systems that interact largely with the physical world. Examples of autonomy-in-motion include LAWS. Once launched, such weapons can ramble in a designated area of operations for some time, hunting for targets. After intercepting a target, they attack and destroy it without any human engagement. Critical decisions based on autonomy at rest in an increasingly digital world can yield profound effects. For instance, decisions made based on the algorithmic processing of intelligence could lead to kinetic strikes on the wrong targets in the fog of war. Under such circumstances, a human might execute the strikes but an AI system could play a substantial role in informing decision-makers about necessity of an attack and identification of targets to engage.

The states have started to incorporate AI into the military sector to achieve comparative advantage vis-à-vis adversaries. The fast pace race of states for the inclusion of AI into the military systems has increased because of its unmatchable efficiency, enhanced sophistication and the minimization of errors. The major powers see AI as a tool to alter the balance of power in their favour. The significance of AI is very much evident in the statement of President of Russia, Vladimir Putin, 'artificial intelligence is the future not only of Russia but of all of mankind. There are huge opportunities, but also threats that are difficult to foresee today. Whoever becomes the leader in this sphere will become the ruler of the world.'[11] This statement points towards the ambitions of the states for acquiring new technologies based on fear of being left out. The factors related to AI-based new technologies such as being efficient, speedy in processing information and minor or non-involvement of humans might overcome the possible associated risks as the military officials would not want to lag in arms racing as it will make their military capabilities significantly vulnerable vis-à-vis opponents.[12] Thus, this very notion has generated competition and arms racing with a special focus on applying AI-based technologies in military strategies.

Indeed, South Asia is not an exception to this, where particularly India does not want to be left out in the race of acquiring AI-based technologies. India, in recent years, has been actively involved in developing AI-based technologies for military purposes.[13] India is an emerging market of venture capital investment in AI-related technologies poised to reach $881 million by 2023 and can add $500.0 billion to Gross Domestic Product by 2025.[14] The senior officials of the Indian Government have made it clear that India views the pursuit of military AI to be vital for its national security and strategic ambitions.[15] Prime Minister Modi, during the inauguration of the RAISE-2020 summit, expressed India's ambitions by stating, 'India has led the world in knowledge and, learning and will continue to digitally excel and delight the world. India should become the hub of AI.'[16] Prime Minister Modi's focus during that address was on using AI as a vehicle of social transformation and that India has not remained oblivious to the military utility of AI. India's drive for acquiring AI and its subsequent application in the military domain, together with its changing strategic postures, may ultimately impact the deterrence stability in South Asia (as discussed below).

In 2019, the Indian Ministry of Defence (MoD) established a high-level Defence AI Council (DAIC), which was assigned the task to provide strategic direction to adopt AI in the military domain. India is establishing a joint partnership between the industry and government for the deployment of such technologies. In addition, Artificial Intelligence Task Force has been working to employ AI to give India a military edge.[17] To achieve a military advantage in AI, India has already established a Centre for AI and Robotics (CAIR) in the Defence Research and Development Organization (DRDO) with the objective of undertaking AI in the defence sector. This is aimed at enabling AI-based military systems in areas such as Net-Centric Systems for tactical Command, Control, and Communication Systems, Intelligence Systems and Unmanned Vehicles; and Information Security.[18]

India underwent doctrinal changes such as JDIAF-2017 and LWD-2018 (discussed in Chapter 3) to incorporate new technologies in military warfare. Based on strategic ambitions, India is running at a fast pace to modernize its military and adopt modern technologies against its adversaries in line with the evolution of its offensive doctrines. In January 2019, Army Chief Gen. Bipin Rawat made a strong case for integrating technology such as AI into military systems and emphasized the need for 'looking inwards' and indigenizing production in the defence sector. He stated, 'our adversary on the northern border is spending a huge amount of money on artificial intelligence and cyber warfare. We cannot deny that it is a time for us to also focus on AI and big data analysis, rather than keeping it confined to mere definitions.'[19]

In March 2018, a multi-stakeholder task force was set up on the directions of Prime Minister Modi and Defence Minister Singh to study the implementation of AI from the national security perspective. Thus, as of today, various arms under the MoD are using at least 75 AI products and

technologies or are in the advanced stage of putting these products into use.[20] India has been developing the Multi-Agent Robotics Framework, which would likely act as a team of soldiers and assist the Indian Army. Moreover, around 200 DAKSH Autonomous Robots are also with the Indian Army, capable of defusing bombs in dangerous situations. These have been categorized as remotely operated vehicles (ROV). India is also collaborating with Japan in the field of Robotics and AI and its applications in military systems. In the same vein, India has been working towards more sophisticated uses of AI in the military as well. These include; image interpretation, target recognition, the objective range, kill zone assessment of missiles and utilization of robots in more ungraded forms.[21]

India points towards China for its quest to acquire AI-based technology. China is miles ahead of India in AI. Significantly, the Final Report released by the U.S. National Security Commission on Artificial Intelligence in 2021 describes China as a 'competitor,' if not a leader, to the U.S. in terms of AI development.[22] China and U.S. are engaged in a tight race towards domination of AI. While the U.S. has traditionally been the leader in AI research and industry, China is quickly catching up and, in some areas, has gotten ahead of its major competitor. India, which anticipates China as a threat due to its historical experiences and the China-Pakistan nexus, is now in full swing to utilize AI in the military sector to consolidate it.[23] In this year's budget, India has responded to its neighbour's plans to become an AI superpower by announcing a new national program focused on research and development (R&D) of the new revolution in the industry. India could respond to China or not; however, India's AI technological quest would bring severe security implications for Pakistan's national security and broaden the spectrum of threats for the latter.

Pakistan certainly perceives these developments as offensive which could seriously undermine the strategic stability in the region and start a new AI arms race in South Asia. With the advent of sophisticated technologies such as AI and particularly India's huge investment in it, the balance of power may tilt in India's favour in South Asia. Further, the greater half of AI and lethal autonomous weapon systems have the potential to affect coercion strategies and escalation dynamics in crises and conflicts between India and Pakistan. So far, deterrence largely remained intact between India and Pakistan, where humans tried to deter other humans from taking undesirable courses of action. It seems that automated mechanisms may significantly impact the credibility of deterrent threats in the South Asian region.

Automation is the application of AI to particular tasks, some of which might involve robotics and, therefore, automated or autonomous weapon systems. Similarly, there are different variants of autonomy in terms of function and sophistication. One dimension of the application of AI is that it permits robotic machines to operate without human intervention based on interaction with their environment. As the autonomy in military warfare is likely to increase, a significant part of the decision-making process may be

controlled by these machines in any future crisis that erupts between India and Pakistan. The control of autonomous weapons to decide their time and target of choosing might increase in the coming times. Advanced autonomous, AI-based technologies may inflict major losses on the adversary. Alarmingly, what will be the likely scenario if a machine misinterprets the data appropriately? The automated mechanism may significantly impact the credibility of deterrent threats between both nuclear rivals. Whichever state acquires autonomous systems between India and Pakistan might seem more credible when employing deterrent threats vis-à-vis the other state without them.[24] Nevertheless, the adversary states who do not possess autonomous systems will not simply comply with the coercive threats that do have them.

Certainly, the states will develop their strategies and requisite technological capabilities to counter, avert, or mitigate the advantages of autonomous systems. In case both opposing states have the capability of autonomous systems, then employing these systems could be seen as a low-risk phenomenon. Thus, it could provoke the rival countries to attack adversaries without crossing the nuclear redlines. For instance, India employed a compellence strategy involving limited use of force in February 2019 against Pakistan, while the latter responded on the very next day by keeping deterrence intact. So, if India uses an autonomous system based on a compellence strategy involving either threat of use of force or limited use of force, this would add a new rung in the escalation ladder, thereby destabilizing deterrence in South Asia.

AI and autonomy could be used right across the nuclear realm. If such a phenomenon occurs in the future, it will not be possible to prevent any inadvertent or intended launch of a nuclear missile. The reason attributed to it is numerous technical constraints and complexities to designing, developing and coding such an automated intelligent weapon system are almost impossible. Importantly, if India, a major power in the region, were to use AI to increase its nuclear force capabilities and structure, this could further impact the deterrence capability of Pakistan, thereby weakening strategic stability. The technological advancement in AI and machine learning may perhaps be significantly critical to the application of conventional force to an adversary's high-value assets, including nuclear forces and command-and-control infrastructure. Further, such a weapon system will extremely be vulnerable to dangerous cyber-attacks. Hence, the dependence on AI-driven nuclear weapons or missile defence systems could simply be categorized as an act of silliness. It is pertinent to mention that when technical malfunctions in past incidents, such as the Soviet missile alert in 1983,[25] brought the world almost near to nuclear catastrophe but the presence of a human in the decision-making process saved humanity from nuclear annihilation. Importantly, in protracted conflicts such as India and Pakistan, the motivation may be strong enough for each belligerent state to employ autonomous systems early as well as widely to gain coercive advantage against the other state and, additionally, to make all efforts to avert others from gaining

an advantage. Thus, this may push states to adopt a first-strike posture that would ultimately lead to deterrence instability. At present, however, the application of autonomous systems is limited as a user may not be confident about how decisions were reached by using AI. Computational power and a desire to keep humans 'in the loop' also impose limits, and users are reluctant to trust AI-produced information because the processes supporting the generation of that information are opaque.

AI might also be used to create deepfakes for disinformation campaigns that swiftly complicate a nuclear crisis. For instance, it can be used to develop doctored videos, images or audio with complete semblance to the real person. The deepfakes use the voice, facial impressions and other associated personality traits of a specific person over another. Indeed, it has severe moral and legal dimensions, nevertheless, it could lead to generating lethal threats to peace and security in any conflictual situation most notably in a nuclearized environment.[26] For instance, India and Pakistan have experienced numerous crises under a nuclear overhang. If a similar crisis that erupts in the future is at its peak, a doctored video, audio or image could lead to catastrophic outcomes, particularly in a situation when means of communication between the two states are non-existent or ineffective. All of these applications are potentially disturbing, but especially those that lead to challenging the secured second-strike forces or creating renewed escalatory risks. Thus, deepfakes carry a possible threat to deterrence stability in South Asia.

Apropos, India and Pakistan are on the road to accelerate the application of AI to various new technologies as part of a sweeping strategy to harness and integrate these latest innovations more swiftly to have an edge on the adversary. The use of AI and LAWS by India and Pakistan has all the requisite potential to impact the coercive strategies and conflict dynamics in South Asia. The AI-based technologies may affect deterrence due to the fast information processing and quick decision-making as it can result in inadvertent escalation, particularly in the South Asian strategic environment where the region is witnessing a trust deficit concerning recurring violence and long-standing Kashmir dispute. Further, the non-involvement of humans and the difference between AI and human way of thinking and understanding a particular scenario may alter the deterrence and escalation dynamics in any crisis that erupts in the wake of a violent event in Indian-administered Kashmir or elsewhere in India. The AI-based technologies will possibly worsen in case of apprehending human signalling involving deterrence and particularly de-escalation. So, AI and machine learning may further deteriorate deterrence stability between India and Pakistan. Further, the inherent dangers linked to the application of AI and machine learning in association with disruptive technologies, LAWS drones/UAVs, space-based technologies and cyber technologies seem to erode the foundation of nuclear deterrence thereby creating new warfare domain. Thus, disruptive technologies will significantly impact the battlefield soon and put strategists to the test and trial to revise and devise

new deterrence models. The section below discusses the possibility of the application of AI in these technologies and their impact on the deterrence stability and warfare domain of South Asia.

Drones/unmanned aerial vehicles

If there is one military technology proven to be a game-changer thus far, it's drones.[27] As drones/UAVs have been used in numerous international conflicts in recent years. The reliance on drone technology has increased since it is no longer just employed as a means of reconnaissance and damaging targets but is effectively used for the coordination of artillery, tanks and infantry. Drone strikes have played a key role in recent conflicts. The unprecedented advances in new weapon technology resulted in a massive revolution in military warfare.[28] The conflicts such as the ongoing Russia-Ukraine war, the Nagorno-Karabakh conflict (between Azerbaijan and Armenia) and the proxy war in Libya (between Turkey and the alliance of Saudi Arabia and UAE) witnessed the use of military drones. The killing of Iranian General Qasem Suleimani[29] and others[30] by the U.S. indicates the increase in the use of drones. Importantly, the United Nations, in a recently published report, concluded the use of advanced AI-based drone technology in Libya, where the troops of Libyan general Khalifa Haftar were hunted down and remotely engaged.[31] Armed drones and other weapons with varying degrees of autonomy have become far more commonly used by high-tech militaries including the U.S., Russia, UK, Israel, South Korea and China.

In the case of India and Pakistan, both countries have already acquired and are deploying drone technology. India has tried using these systems (quad-copters) along the border in recent times. For instance, Pakistan armed forces shot down a roundabout dozen Indian spy drones in 2020.[32] These actions from the Indian side were violations of established Airspace Standard Operating Procedures between the two countries. On the other side, India claimed to have thwarted a threat by intercepting two explosive-laden drones flying over one of the air bases at Kaluchak in Indian-administered Kashmir.[33] As per these claims, the militants, for the first time, used drone technology to target Indian military installations; however, no responsibility has been accepted by any of the non-state actors.[34]

The alleged drone strikes in the Indian-administered Kashmir have exposed a significant gap in India's capabilities to counter this new technology. Currently, India has no specialized options other than small arms to hit the drones and has no practical strategy to counter these types of attacks. There is a possibility that India, in line with its offensive posture, goes for implementing coercive strategies to compel and/or deter future drone strikes. However, to implement such an offensive strategy, India requires to enhance its military capabilities enabling it to carry out a punitive response in the wake of any drone strikes, particularly if the terror incident results in a significant loss.

Both India and Pakistan are in the process of acquiring sophisticated drone technology and could use these lethal drones against each other soon. Indian military announced in 2016 that they have finalized a blueprint to procure more than 5000 UAVs (till 2026) for about US$3 billion.[35] India is also working on developing an anti-drone system. India successfully used combat-armed drone swarms comprised of 74 kamikaze swarm drones, intending to overwhelm the adversary's military platforms and targets autonomously. India has ordered 100 Indo-Israeli kamikaze drones indigenously developed in India with the support of Israel and planned to be positioned at the Line of Actual Control against China and also at the LoC against Pakistan. The new drone technology uses an electric engine propulsion system with less sound and an autonomous navigation system during its cruising and loitering phases making it appropriate for covert operations at low altitudes against the adversary.[36]

New Delhi is soon inducting 12 sets of armed drone swarms. Nearly 7 of these autonomous surveillances and armed drone swarms (A-SADS) are equipped with 50–75 AI-enabled aerial vehicles, each capable to communicate with the control stations and also among themselves are intended to be deployed in high-altitude areas. While the remaining five sets are capable to conduct an offensive and defensive operation in the plain and desert areas.[37] The A-SADS will act as a force multiplier tool for the field commanders as the new technology will assist in efficient ISR and also can engage a range of enemy targets such as air defence equipment, command and control centres, artillery, tanks, infantry combat vehicles, ammunition and fuel dumps.[38]

Pakistan initiated the UAVs development program in 1997–1998. India, by that time, was in the process to import Israeli-made Searcher Mk 1 UAVs. Moreover, the DRDO had already initiated an indigenous R&D program to design UAVs.[39] Since then, Pakistan has had a blend of both indigenously designed and externally procured drones. Pakistan has made significant progress in the indigenous development of UAVs and their application for military purposes.[40] For instance, Buraq was developed by the National Engineering and Scientific Commission (NESCOM) and it has a range of 1000 kilometres that could be employed in ISR and strike missions. Pakistan Aeronautical Complex (PAC) developed an Ababeel that could be employed for strike missions and it has a range of 140 kilometres. NESCOM, in collaboration with Global Industrial and Defence Solutions (GIDS), developed Uqab that could be used for Surveillance with a range of 150 kilometres. While GIDS developed Shahpar to be used for Surveillance with a range of 250 kilometres. Surveillance and Target Unmanned Aircrafts (SATUMA) developed Jasoos II in 2010 with a range of 100 kilometres that could be used for Reconnaissance and Training missions. The same institution developed Mukhbar with a range of 180 kilometres that could be employed for Reconnaissance and Surveillance. Further, PAC, in collaboration with Chinese Chengdu Aircraft Company, is working to develop Unmanned Combat Aerial Vehicles (UCAVs) 48 Wing Long for PAF-specific

requirements.[41] The UCAV has strike capability and can also be used in other areas such as disaster assessment, meteorological operations and environmental protection.[42] In addition to these indigenous development programs, Pakistan has acquired Chinese and Turkish-made drones to include in its fleet. For instance, Pakistan purchased Cai Hong 4 (Rainbow 4, or CH-4) developed by Chinese Aerospace Long-March International Trade Co Ltd (ALIT) and received five CH-4s in 2021.[43] The Chinese CH-4s variants can be employed for reconnaissance and strike missions. Recently, PAF tested Turkish-built Bayraktar TB2 in a military exercise. The Bayraktar TB2 is capable of conducting ISR and also can be employed for striking missions.[44]

Pakistan seems to race ahead of India in drone technology.[45] However, India's acquisition of drones in the changing conflict dynamics where it employed a compellence strategy involving limited use of force against Pakistan may assist the former to use the new drone technology in any crisis in future times. For instance, India's intentions are evident in the tweet of the Additional Directorate General of Public Information, IHQ of MoD (Army), 'Swarm Drones being inducted into the Mechanised Forces, duly embracing the niche and disruptive technologies, will provide an edge to Indian Army in meeting future security challenges.'[46] Indian officials pointed towards the possible use of drone technology against militants in the region, and more importantly, after repeated episodes of blaming Pakistan for employing drones along the LoC to provide weapons to militant groups in Indian-administered Kashmir since last year, whereas Pakistan, including the former Prime Minister of Pakistan Imran Khan, has repeatedly warned that India is planning to stage a 'false flag' operation to divert the attention of the public from its domestic worries.[47] Thus, India intends to use drone technology along LoC and take a certain degree of risk under a nuclear overhang.

Like in the 2016 and 2019 crises, the objective of such an offensive action would be to wreak high costs on Pakistan for its alleged involvement in the terrorist incident without necessarily waiting for evidence. In Pulwama/Balakot crisis, India implemented a compellence strategy involving limited use of force by targeting an alleged terrorist outfit based in Pakistan; however, it lost a fighter jet during the dogfight on the next day, and additionally, IAF aircrew was captured by Pakistan's Army. This loss based on cost-benefit analysis might have acted as an impetus for the Indian leadership to not go offensive and averted a second round of confrontation when PAF conducted a retaliatory strike on 27 February 2019. With the induction of drone technology, policy-makers have more space to take greater risks as the employment of unmanned drones has lesser consequences than a fighter jet being hit by an aircrew. This could encourage India to go offensive in the wake of any terrorist incident in the Indian-administered Kashmir or elsewhere in India in the future times. Moreover, this may further prolong the India-Pakistan conflict, which continues to experience crises even after the nuclearization. The drone technology will act as an impetus to adopt compellence involving limited use of force, thereby creating deterrence instability in the region.

The AI-equipped drones seem to alter the nature of warfare in a way that these weapons would have the full autonomy to decide on whom to attack without human input. This means that the use of AI and associated autonomous systems may result more likely in crisis escalation and crisis instability by creating an environment conducive to a speedy and inadvertent escalation of crisis and conflict.[48] The reason attributed to it is the provision of fast decision-making and respective actions due to the use of AI. This makes the unintended escalation of a crisis a matter of real concern in conflict-prone South Asia. Particularly India, which adopted a compellence strategy based on offensive posture might feel more incentivized to employ AI-driven UAVs to gain an advantage over the adversary.[49] Thus, drone technology has become an effective precision strike and damage control instrument of this era, thereby compromising the notion of existing doctrines and the concept of deterrence.

Hypersonic weapons

The advancement in machine learning and autonomy is probably to have a significant impact on nuclear weapon delivery in numerous ways. For instance, in the case of machine learning, the impact is likely to result primarily in a qualitative improvement in delivery systems. Machine learning could be used to make nuclear delivery systems capable of navigating their target more autonomously and precisely, with less reliance on humans setting navigation and guidance parameters. Several countries are currently exploring the use of machine learning to develop control systems for hypersonic vehicles.[50] Hypersonic technologies[51] could make the existing nuclear systems increasingly risky as it can carry conventional as well as nuclear weapons with a speed of five times more than sound. The U.S., Russia and China are working for developing manoeuvrable hypersonic vehicles that could probably escape the missile defences.[52]

Two types of hypersonic weapons are currently being produced: hypersonic glide vehicles (HGVs) and hypersonic cruise missiles (HCMs). Implications of HGVs and HCMs are often cited as key challenges to nuclear stability. First, they can be nuclear-laced and used to evade an adversary's missile defence systems. Second, they can be employed for long-range non-nuclear precision strikes, which could make it possible to undertake disarming attacks against nuclear forces. The sophisticated guidance systems and high level of accuracy of hypersonic weapons make them potentially suitable for non-nuclear precision strike operations. During a crisis, it would not be clear whether warheads were nuclear-armed or conventionally laced and what the perceived target was, which in turn affects operational strategies and the spirit of declared doctrines. The idea is that delivery systems have become so accurate and sensors so transparent at locating, tracking and engaging targets that protecting and concealing weapon systems seems to become increasingly challenging. The argument is that nuclear

forces that have long been seen as survivable to hold nuclear deterrence have now become more vulnerable.

India claimed to test an indigenously developed hypersonic weapon in September 2020. It will serve as a solid foundation to build a hypersonic missile.[53] India became the fourth state to acquire this new technology alongside great powers such as the U.S., China and Russia. Indian Defence Minister Rajnath Singh categorized the test a 'landmark achievement' on the road towards self-reliance. He further stated, 'it's now time to progress to the next phase with all critical technologies being established by the successful [HTDV] flight test, using the indigenously developed scramjet propulsion system.'[54] What makes hypersonic missiles lethal is not just their speed but their ability to manoeuvre once launched. Significantly, the missile can penetrate missile defence systems due to its high speed and manoeuvrability. Indian hypersonic weapon is powered by a scramjet engine and has a speed of Mach 6 (six times the speed of sound). Additionally, DRDO is also in the process of developing BrahMos-II, an HCM with the support of Russia. BrahMos-II is also probably designed with Mach 6 speed using hypersonic scramjet technology.[55]

India's joining of the hypersonic club has raised serious security threats for Pakistan. This technological development will augment India's ballistic missile capabilities. The hypersonic weapon will empower India to target Pakistan's critical military bases with sharp precision and high manoeuvrability. The high speed and manoeuvrability enable it to easily penetrate Pakistani missile defence systems. The hypersonic missile system poses significant challenges to the logic of nuclear deterrence. Though the parameter of speed remained a crucial element in warfare, the induction of hypersonic weapons had unprecedented advantageous characteristics such as the speed and agility of the missiles. This considerably condenses the response time of nuclear weapon states, thus compelling them to use pre-emptive strikes.

The speed and agility of hypersonic obsoleted the missile defences not only in current times but also in the future. The failure of the missile defence system, together with the lessening response time, boosts the nuclear weapon states to conduct a pre-emptive strike. Significantly, when the nuclear weapon states are incapable to survive second-strike, then the deterrence stability becomes highly problematic. The hypersonic weapons further distort the distinction line between the conventional and strategic types of weapons. The perception of whether a hypersonic weapon is armed with a conventional warhead or is nuclear armed would generate added fear and ambiguity between India and Pakistan. This increases the threat of unauthorized or accidental nuclear launch. Thus, the dual-use aspect of the hypersonic missile system intensifies the nuclear escalation risk in South Asia. The hypersonic missile system would further increase India's offensive counterforce capabilities. To deter the Indian threat, Pakistan will have to develop its hypersonic technology. Pakistan will have to make a critical assessment of India and plan possible countermeasures to ensure deterrence stability in South Asia.

Space-based technologies

Space is often referred to as the fourth medium like land, sea and air within which military activities shall be conducted.[56] States have made huge investments in acquisition of the space-based capabilities to maximize national power and prestige in modern times. There is a significant increase in the dual use Space-based technologies in both peaceful and war times.[57] For instance, the U.S. military used Space-based technologies such as Global Positioning Systems (GPS) in Persian Gulf War (1990–1991) and this is often reckoned as 'the first space war.'[58] The U.S. continued to use Space-based technologies against adversaries having no such capabilities. However, the Russia-Ukraine war is considered to be the first war in which both sides used Space-based technologies.[59] The rapid technological developments related to space and its subsequent application in the military domain are further increasing the significance of space-based technologies in contemporary times.

Space-based technologies are becoming effective for the operationalization of nuclear forces in terms of communications for C2 systems, target identification and acquisition; surveillance; intelligence gathering; guidance for delivery systems; and the BMD systems. The ISR capabilities are essential for nuclear weapon states to envision an effective first strike against a nuclear adversary. Space-based technologies offer the most reliable means for real-time and reliable ISR data at locations where other military tools are unproductive. The state's temptation for increasing the congregation of communication, remote sensing and navigational satellites, significantly enhances its ISR capabilities and, subsequently, its target-acquisition capacity. These technologies are cost-effective and readily available. Worryingly, there is a lack of progress in developing normative instruments to regulate these developments.

Space-based weapons, sensors, defensive interceptors and the diffusion of counter-space capabilities will make space an increasingly contested military environment. The U.S. is more heavily dependent on space-based assets and computers than its rivals Russia and China and will likely employ counter-space attacks in the early stage of any conflict with the U.S. in a bid to disrupt U.S. C4ISR. Chinese space-based capabilities are growing at a much faster rate in recent times. Though for most of the previous three decades, outer space remained comparatively peaceful in nature and not linked to the brutal realities of geopolitics, nevertheless, it has become one of the central elements of the competition between the U.S. and China in the last few years. Significantly, China is maximizing space-based technologies to counter the U.S., and the implications of the great power competition will be observed in South Asia too.

Like other great powers and much in line with its global ambitions, India is hugely investing in space-based technologies. The Indian Space Research Organization (ISRO), a civilian agency, has coordinated India's military and

civilian space programs since the 1960s. However, in 2019 India took major technological and institutional steps towards a globally competitive space warfare capability.[60] According to media reports, India's core objective is to develop sensors and satellites along with ground stations to support defence forces with space assets. Further, the key focus is on building surveillance capabilities of sensitive areas via space-based technologies from a military perspective.[61]

The launch of India's Technology Experiment Satellite (TES) in 2001, CARTOSAT-1A (a series of Indian optical earth observation satellites) in 2008, CARTOSAT-2B in 2010, Radar Imaging Satellite (RISAT-2) in 2009, RISAT-1 in 2012 and GSAT-7 (multi-band military communications satellite) in 2013 are significant initiatives towards military-dedicated space systems.[62] Prime Minister Modi announced in his address that India successfully underwent the Anti-Satellite (ASAT) test on 27 March 2019. The Prithvi Delivery Vehicle Mark-II (PDV MK-II), a ballistic missile defence interceptor, developed by DRDO, hit and destroyed an Indian Microsat-R satellite in a flight that lasted just over half a minute.[63] These space-based technologies significantly strengthen India's C4ISR capabilities. The development of indigenous systems has all set the foundations for India to go for pursuing its BMDs and ASAT capabilities. India conducted its first integrated space warfare exercise in July 2019, bringing together personnel from across the services. The exercise focused on using communications and reconnaissance satellites to integrate intelligence and fires across the range of Indian military assets.[64] Importantly, these technological developments and military training exercises aim to incorporate disruptive technologies in warfare strategies that, in turn, have all the potential to alter the deterrence stability in South Asia.

India's space program is far ahead of Pakistan. This is the reason that Pakistan is highly vulnerable to an Indian offensive strike based on modern disruptive space technologies. Pakistan developed its space organization reckoned as the Space and Upper Atmosphere Research Commission (SUPARCO) in 1961. Importantly, Pakistan with the assistance of the National Aeronautics and Space Administration (NASA) and the U.S. Air Force, launched its first rocket Rehbar-1 in June 1962 becoming the third state in Asia and the tenth in the world to do so. Pakistan after getting a great start could not build a sound foundation to blossom its space program. Nevertheless, the ISRO has established technological superiority vis-à-vis Pakistan's SUPARCO in space operations in the region. The ISRO helps keep an eye on Pakistan's strategic manoeuvres. India is operating 16 satellites for military purposes to be used by its armed forces, which act as an early warning system in a war-like situation. India's quest for space-based technologies acted as an impetus for Pakistan to revive its space program. With the support of China, Pakistan launched Pakistan Remote Sensing Satellite (PRSS-1), a satellite with remote sensing capabilities that could also be used for military purposes. However, still Pakistan is dependent on

foreign commercial satellites, primarily China-based for use in various sectors such as communications, environment and agriculture.

India maintains a stance that its strategic and space-based technologies are not for Pakistan but focused on China which has already developed its counter-space capabilities. Nevertheless, India's recent technological innovations and requisite doctrinal changes indicate two front-war strategies against China and Pakistan. India's offensive posture, together with enhanced space-based technological capabilities, will lead to an impact on deterrence stability between India and Pakistan. For instance, India is currently using numerous satellites with technological sophistication for both commercial and military purposes, whereas Pakistan, a conventionally weaker state, is facing its adversary with a single Remote Sensing Technology satellite for both commercial and military purposes. India is ahead in the race with 16 technologically advanced satellites. India's use of these satellites for military objectives in a conflict-prone South Asia, particularly in the wake of India's surgical strike stratagem and revocation of articles 370 and 35A, should ring an alarm in Islamabad. Thus, there is a technological imbalance in outer space between India and Pakistan.

India's space-based ISR satellites would enhance its counterforce capabilities vis-à-vis Pakistan. Likewise, this would provide India's Command and Control centres with quantifiable and discernable data. These acquired space capabilities would further embolden India's Nuclear Command and Control (NC2) with more liberty to take decisions. Such a security dilemma would undermine the South Asian nuclear deterrence equation by providing India with an incentive to launch a counterforce pre-emptive strike against Pakistan.[65] Keeping in view India's intentions to use a compellence strategy involving a threat of use of force or limited use of force against Pakistan in the wake of any terrorist incident, it may be encouraged to exploit the latter's vulnerabilities in the space to pursue its strategic objectives. Thus, maintaining deterrence against India in space will be a top priority for policymakers in Pakistan.

Cyber-security risks in the AI age

The new and disruptive technologies are primarily altering the definition of security. The AI-based technologies and AWS, particularly in the nuclear realm, point to the fact that information security, data security, network security and cyber-security risks are going to grow rapidly. Cyberspace is one of the most complex as well as dangerous domains of warfare in modern times due to unmatchable disruptive and destructive capabilities. It is believed that the U.S., China, Russia, the United Kingdom and Israel are leading the race[66] and have active cyber capabilities for both offensive and defensive operations. For instance, Stuxnet is regarded as the first publicly disclosed cyber weapon.[67] It is a powerful computer worm designed by the U.S. and Israeli intelligence to disable a key part of the Iranian nuclear

program.[68] Another case of the evolving nature of cyber warfare is the use of cyber operations in the war between Russia and Ukraine has led to raising many questions; however, it offers an important understanding concerning the nature of cyberwarfare in modern times.[69] Since the use of cyber warfare in the Russian-Ukrainian conflict, cyber security is becoming one of the major priorities of states, businesses and important critical infrastructure operators.[70] The devastating potential of cyber has made it to be another independent domain in the military strategy much like air, sea, land and space.[71] The great powers such as the U.S., China and Russia are modifying their doctrinal strategies and are involved in vicious arms racing to acquire cyber weapons and probe the cyber capabilities and defences of the other players.[72] India and Pakistan are no exception to this majorly because of India's ambitions to achieve technological superiority in cyberspace.

According to the Indian National Association of Software and Service Companies (NASSCOM), the IT industry of India generated a revenue of US$227 billion in the fiscal year 2022, a growth of 15.5 percent.[73] Prime Minister Modi, in his address on the 74th Independence Day, stated that India will soon announce a new cyber security policy.[74] India is ambitiously pursuing the goal of getting the status of great power, and indeed, achieving dominance in cyberspace in the South Asian region is a part of its broader objectives.

India has developed a massive cyberspace capability vis-à-vis Pakistan. India has conducted cyber-attacks involving malware attacks and spying operations against Pakistan; however, the latter lacking the requisite cyber capability conducted less number of cyber operations vis-à-vis the former.[75] Alarmingly, in recent times, there is an increase in the frequency of cyber-attacks against Pakistan.[76] It is estimated that a total of one million cyber-attacks have been launched on Pakistan's cyberspace in the timeframe from January to November 2021.[77] Pakistani intelligence agencies exposed India's intelligence network cyber-attack aimed to target Pakistan's armed forces and government officials. Pakistan's ISPR said in a statement, 'Pakistan's intelligence agencies have identified a major cyber-attack by the Indian intelligence agencies involving a range of cybercrimes, including deceitful fabrication by hacking personal mobiles and technical gadgets of government officials and military personnel.'[78] According to media reports, a special type of malware named *Pegasus* was employed in April–May 2019, where approximately 1400 senior government and military officials were affected in 20 countries including Pakistan. Pakistan approached WhatsApp management to share user details allegedly targeted by Israeli spyware (NSO Group) and further provide feedback on remedial actions to avoid the repetition of hacking incidents.[79]

India is the largest buyer of Israeli-made weapons, and indeed cyberspace technologies are not an exception. Recently, both countries signed a memorandum of understanding to enhance cooperation in the field of cyber security to counter the challenges that might ascend due to rapid digitization in

the wake of COVID-19. Nevertheless, this collaboration between Israel and India has a high probability of converting into a strategic ties in the cyberspace domain as the former is considered to be an established power in an international cyber warfare race and the latter has much to gain from its advanced cyber capabilities.[80] Thus, the ever-increasing complexities of cyberspace, together with India's acquisition and further implementation of its offensive cyber capabilities, have seriously threatened Pakistan's cyber security.

Pakistan gives due significance to its security to counter the threats generated in a complex environment in the wake of new technologies; however, cyber security could be categorized as one of the neglected areas. The Islamabad Policy Institute, a Pakistan-based think tank, in a report highlighted that Pakistan is one of the worst-prepared countries in protecting itself in cyberspace.[81] So in a compulsive response, Pakistan has to devise its cyber security strategy to counter the Indian threats. In recent years, India, based on its offensive posture, has employed compellence involving a threat of use of force and limited use of force against Pakistan. It has to develop the requisite capabilities in all domains including cyberspace to maintain deterrence stability in the region.

The disruptive technologies will be acting as a force multiplier in cyber-led warfare and their potential integration with the cyber domain would also generate additional risks in conflict-prone South Asia. Induction of these new technologies is likely to enhance the scale of cyber-attacks as more unreported vulnerabilities would be there in these developing techs upon which hackers can capitalize. In the nuclear realm, the cyber challenge involves the risk of malicious actors intruding into the software, hardware, data, networks and processes of computer systems that govern weapons, C2 systems, communications and warning systems, as well as the people and information that operate them. The vulnerability of a nuclear weapon system to hackers is a product of its reliance on digital software, the level of security and the extent to which it is separate from unsecured networks. Any invader wanting to compromise a network-centric system, data and people could use a range of different paths. The most difficult would be direct attacks on weapons and C2 systems, such as by gaining access to these highly protected networks to release malware into the system. The supply chain for hardware and software used across the nuclear enterprise might be targeted. Another risk would be to interfere with the data and information needed by these systems or with the human operators who rely on them. All this has clear implications for signalling, crisis communications and inadvertent escalation between nuclear-armed adversaries.

To sum up, the inclusion of disruptive technologies in states' inventories and their evolving force postures have trapped India and Pakistan in unresolvable arms racing problems. For example, India's ambitions of inclusion of cutting-edge disruptive technologies[82] in its inventories and deployment of new surveillance means continue to create fear and uncertainty for Pakistan, thereby making it less secure against India.

Conclusion

The existing concepts of deterrence, doctrines and operational strategies have been challenged by a fresh storm of technological evolution, thus creating a new warfare domain. India and Pakistan seem to have not lagged because of a correlation between geopolitical settings and technological revolution. For example, the U.S.-China competition in this field has significantly altered the security dynamics of South Asia, where the Indo-U.S. renewed strategic alliance to outweigh China has, in turn, created security challenges for Pakistan. Certain technologies such as disruptive technologies that include artificial intelligence, hypersonic weapons, AI-enabled lethal autonomous weapons, drones, space-based technologies and cyber technologies are being developed in South Asia that seem to have undermined the existing doctrinal strategies, thereby eroding the foundation of nuclear deterrence and changing the existing warfare domain. This has created an emerging grey area and increasing blur line between nuclear and conventional systems, a likelihood of less time for decision-making and a more complex information setting in which to operate, as well as new pathways to escalation, miscalculation and entanglement-all of which could increase the risk of a nuclear use.

AI is likely to change the existing ways and means of war by introducing a significant level of autonomy in warfare. India, in recent years, has been actively involved in developing AI for military purposes together with its changing strategic postures that, in turn, may ultimately impact the strategic stability in South Asia. Machine learning could be used to make nuclear delivery systems capable of navigating to their target more autonomously and precisely, with less reliance on humans setting navigation and guidance parameters. India is exploring the use of machine learning to develop control systems for hypersonic vehicles that are set to increase dependency on nuclear weapons because of their swift delivery mechanism and it could make the existing nuclear system increasingly risky.

Similarly, drone strikes have played a key role in recent conflicts. In the case of India and Pakistan, both countries have already acquired drone technology and could use these lethal drones against each other. The drone technology will act as an impetus to adopt compellence involving limited use of force, thereby creating deterrence instability. The impact of drones on warfare is such that weapons will have full autonomy to decide on whom to attack without human input. This means that the use of AI and associated autonomous systems may result more likely in crisis escalation and crisis instability by creating an environment conducive to a speedy and inadvertent escalation of crisis and conflict. Additionally, space-based weapons, sensors, defensive interceptors and the diffusion of counter-space capabilities will make space an increasingly contested military environment in South Asia. India's space-based ISR satellites would enhance its counterforce capabilities vis-à-vis Pakistan. Keeping in view India's intentions to use a compellence strategy involving a threat of use of force or limited use of force against Pakistan in the wake of any terrorist incident, it may be

encouraged to exploit the latter's vulnerabilities in the space to pursue its strategic objectives. Thus, maintaining deterrence against India in space will be a top priority for policy-makers in Pakistan. The disruptive technologies will be acting as a force multiplier in cyber-led warfare, too, and their potential integration with the cyber domain would also generate additional risks in conflict-prone South Asia.

To sum up, the inclusion of disruptive technologies in states' inventories and evolving force postures seems to have changed the existing patterns of warfare between India and Pakistan. India's ambitions of inclusion of cutting-edge disruptive technologies in its inventories and deployment of new surveillance means continue to create fear and uncertainty for Pakistan. These developments seem to have made Pakistan less secure against India, thereby creating a new arms racing problem between the two rivals thus eroding the foundation of deterrence.

Notes

1 David W. Barno, 'War in the Fourth Industrial Revolution,' *CSS*, July 16, 2018, https://isnblog.ethz.ch/uncategorized/war-in-the-fourth-industrial-revolution.
2 See Antoine Bousquet, *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity* (London: Hurst & Company, 2007).
3 Edward Geist and Andrew J. Lohn, *How Might Artificial Intelligence Affect the Risk of Nuclear War* (Santa Monica, C.A.: RAND Corporation, 2018).
4 Ibid; James Johnson, 'Artificial Intelligence: A Threat to Strategic Stability,' *Strategic Studies Quarterly* 14, no. 1 (2020): pp. 16–39, https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-14_Issue-1/Johnson.pdf; and Keir A. Lieber, and Daryl G. Press, 'The New Era of Counterforce: Technological Change and the Future of Nuclear Deterrence,' *International Security* 41, no. 4 (2017): pp. 9–49, https://doi.org/10.1162/ISEC_a_00273.
5 Alex S. Wilner, 'Artificial Intelligence and Deterrence: Science, Theory and Practice,' *International Journal* 73, no. 2 (2018): p. 1.
6 Michael Haenlein and Andreas Kaplan, 'A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence,' *California Management Review* 61, no. 4 (2019): p. 2, https://doi.org/10.1177/0008125619864925.
7 Steven Feldstein, 'The Global Expansion of AI Surveillance,' *Carnegie Endowment for International Peace*, September 17, 2019, https://carnegieendowment.org/2019/09/17/global-expansion-of-ai-surveillance-pub-79847.
8 James Vincent, 'Putin Says the Nation That Leads in AI "Will Be the Ruler of the World",' *The Verge*, September 4, 2017, https://www.theverge.com/2017/9/4/16251226/russia-ai-putin-rule-the-world.
9 Andrew, Futter, 'Explaining the Nuclear Challenges Posed by Emerging and Disruptive Technology: A Primer for European Policymakers and Professionals,' *EUNPDC Non-Proliferation and Disarmament Paper*, Vol. 73 (2021), p. 8.
10 Morgan, F. E., et al. *Military Applications of Artificial Intelligence* (Santa Monica, C.A.: RAND Corporation, 2020), pp. 9–10.
11 Radina Gigova, 'Who Vladimir Putin Thinks Will Rule the World,' *CNN News,* September 2, 2017, https://edition.cnn.com/2017/09/01/world/putin-artificial-intelligence-will-rule-world/index.html.
12 Shaza Arif, 'Military Applications of Artificial Intelligence: Impact on Warfare,' *Journal of Aerospace & Security Studies* 1 (2022): pp. 14–15.

13 Pritam Bordoloi, 'How Does the Indian Army Want to Use AI?,' *Analytics India Magazine,* August 4, 2022, https://analyticsindiamag.com/how-does-the-indian-army-want-to-use-ai/#:~:text=So%20far%2C%20the%20Indian%20Army%20has%20used%20AI%20for%20facial,AI%20in%20its%20core%20operations.
14 See 'AI Adoption to Add $500 Billion to India's GDP by 2025: Nasscom Report,' *Business Standard*, June 23, 2022, https://www.business-standard.com/article/economy-policy/ai-adoption-to-add-500-billion-to-india-s-gdp-by-2025-nasscom-report-122062300493_1.html.
15 Vincent Boulanin et al., *Artificial Intelligence, Strategic Stability and Nuclear Risk* (Solna: SIPRI, 2020), p. 80.
16 See Prime Minister's Office, 'Prime Minister Inaugurates RAISE 2020 – a Mega Virtual Summit on Artificial Intelligence,' October 5, 2020, https://pib.gov.in/PressReleasePage.aspx?PRID=1661859.
17 Sonia Naz, India's Military Application of Artificial Intelligence: Implications for Pakistan, *The Centre for Security, Strategy and Policy Research (CSSPR), The University of Lahore* (2021): p. 1.
18 See 'Defence Research & Development Organization, Centre for Artificial Intelligence & Robotics (CAIR),' https://www.drdo.gov.in/labs-establishment/technologies/centre-artificial-intelligence-robotics-cair.
19 See 'Army Chief Pushes for Tech Integration into Military Systems,' *The Hindu,* January 21, 2019, https://www.thehindu.com/news/cities/Hyderabad/army-chief-pushes-for-tech-integration-into-military-systems/article26044576.ece.
20 Abhinandan Mishra, 'Indian Army Gets Future-Ready with AI-Based Equipment,' *Sunday Guardian Live*, July 16, 2022, https://www.sundayguardianlive.com/news/indian-army-gets-future-ready-ai-based-equipment.
21 Ahyousha Khan, 'Artificial Intelligence in South Asia and Implications for Pakistan,' *Strategic Vision Institute*, https://thesvi.org/artificial-intelligence-in-south-asia-and-implications-for-pakistan/.
22 Jieruo Li, 'Artificial Intelligence Technology and China's Defense System,' *Journal of Indo-Pacific Affairs,* April 1, 2022, https://www.airuniversity.af.edu/JIPA/Display/Article/2980879/artificial-intelligence-technology-and-chinas-defense-system/.
23 Surangya Kaur, 'AI Race: China and US in the Lead, Where India Does Stand?,' *News Click,* February 12, 2018, https://www.newsclick.in/ai-race-china-and-us-lead-where-does-india-stand.
24 Michael J. Boyle, 'The Race for Drones,' *Orbis* 59, no. 1 (2015): p. 78, http://dx.doi.org/10.1016%2Fj.orbis.2014.11.007.
25 See Geoffrey Forden, 'Reducing a Common Danger,' *Policy Analysis Paper* 399 (2001): pp. 2–20, https://www.cato.org/policy-analysis/reducing-common-danger-improving-russias-early-warning-system.
26 Shahrukh Khan, 'Technological Challenges in the Way of Nuclear Risks Reduction and Strategic Stability in South Asia,' *Science Diplomacy Perspectives,* Inaugural Issue (March 2022): pp. 27–28.
27 Amar Divakar, 'The Future of War and Deterrence in an Age of Autonomous Weapons,' *TRT World*, June 17, 2021, https://www.trtworld.com/magazine/the-future-of-war-and-deterrence-in-an-age-of-autonomous-weapons-47602.
28 John Yoo, 'Embracing the Machines: Rationalist War and New Weapon Technologies,' *California Legal Review* 105, no. 2 (2017): p. 443.
29 Michael Crowley, Falih Hassan and Eric Schmitt, 'U.S. Strike in Iraq Kills Qassim Suleimani, Commander of Iranian Forces,' *The New York Times,* January 2, 2020, latest updated on July 9, 2020, https://www.nytimes.com/2020/01/02/world/middleeast/qassem-soleimani-iraq-iran-attack.html.
30 Kevin Liptak et al., 'US Kills Al Qaeda Leader Ayman Al-Zawahiri in Drone Strike in Afghanistan,' *CNN*, August 2, 2022, https://edition.cnn.com/2022/08/01/politics/joe-biden-counter-terrorism/index.html.

31 See United Nations Security Report, 'Final Report of the Panel of Experts on Libya Established According to Security Council resolution 1973 (2011),' *S/2021/229*, March 8, 2021, para. 63; and Jamei Dettmer, 'Possible First Use of AI-Armed Drones Triggers Alarm Bells,' *VOA,* June 01, 2021, https://www.voanews.com/a/africa_possible-first-use-ai-armed-drones-triggers-alarm-bells/6206728.html.

32 See 'Pakistan Army Shoots Down 10th Indian Quadcopter This Year,' *The Express Tribune,* July 26, 2020, https://tribune.com.pk/story/2256797/pakistan-army-shoots-down-10th-indian-quadcopter-this-year; see 'Drone Systems in South Asia: Current Trends and Implications,' *Strategic Vision Institute,* https://thesvi.org/drone-systems-in-south-asia-current-trends-and-implications/; and Fahad Zulfikar, 'Pak Army Shoots Down Indian Spy Drone at LoC: ISPR,' *Business Recorder,* January 3, 2021, https://www.brecorder.com/news/40046856/pak-army-shoots-down-indian-spy-drone-at-loc-ispr.

33 See 'Two Drones Intercepted over Base in Occupied Kashmir: Indian Military,' *DAWN,* June 28, 2021, https://www.dawn.com/news/1631984.

34 Aijaz Hussain, 'Drone Attacks on Indian Air Force Base in Jammu Underscore New Threat,' *The Diplomat,* June 28, 2021, https://thediplomat.com/2021/06/drone-attacks-on-indian-air-force-base-in-jammu-underscore-new-threat/.

35 Vivek Raghuvanshi, 'India Finalizes $3B Blueprint for UAV Fleets,' *Defense News*, March 20, 2016, https://www.defensenews.com/air/2016/03/20/india-finalizes-3b-blueprint-for-uav-fleets/.

36 Snehesh Aliz Philip, 'Army Orders over 100 Indo-Israeli Kamikaze Drones Amid Active LAC and Precarious LoC,' *The Print,* September 3, 2021: https://theprint.in/defence/army-orders-over-100-indo-israeli-kamikaze-drones-amid-active-lac-and-precarious-loc/727508/.

37 Rajat Pandit, 'Eye on China and Pakistan, Army Set to Buy Armed-Drone Swarms,' *The Times of India,* September 29, 2022, https://timesofindia.indiatimes.com/india/eye-on-china-and-pakistan-army-set-to-buy-armed-drone-swarms/articleshow/94522387.cms.

38 Rahul Singh, 'Army Receives Swarm Drones, Eyes Light Tanks to Check PLA,' *The Hindustan Times,* August 27, 2022, https://www.hindustantimes.com/india-news/army-receives-swarm-drones-eyes-light-tanks-to-check-pla-101661537524265.html.

39 Lt. Gen. V. K. Saxena, 'Pak UAV Capability – Poised for a Revamp,' *Vivekananda International Foundation*, January 28, 2019, https://www.vifindia.org/article/2019/january/28/pak-uav-capability-poised-for-a-revamp.

40 Abdullah Rehman Butt, 'Evolving Role of UAVs: A Case of Pakistan,' *Journal of Aerospace & Security Studies* 1 (2022): p. 31.

41 Franz-Stephen Gady, 'China, Pakistan to Co-Produce 48 Strike-Capable Wing Loong II Drones,' *The Diplomat,* October 9, 2018, https://thediplomat.com/2018/10/china-pakistan-to-co-produce-48-strike-capable-wing-loong-ii-drones/.

42 Vidi Nene, 'China and Pakistan to Jointly Produce 48 Wing Loong II Drones,' *JANES,* October 11, 2018, https://dronebelow.com/2018/10/11/china-and-pakistan-to-jointly-produce-48-wing-loong-ii-drones/.

43 Gabriel Dominguez, 'Pakistan Receives Five CH-4 UAVs from China,' *JANES,* January 27, 2021, https://www.janes.com/defence-news/news-detail/pakistan-receives-five-ch-4-uavs-from-china.

44 See 'Pakistan Tests Turkish-Made Bayraktar TB2 Drone in Latest Air Exercise,' *Daily Times,* September 29, 2022, https://en.dailypakistan.com.pk/29-Sep-2022/pakistan-tests-turkish-made-bayraktar-tb2-drone-in-latest-air-exercise.

45 Aritra Banerjee, 'Pakistan "Races Ahead" of India in Drone Technology: Is 4th Country to Deploy UCAVs in Combat Ops,' *The Eurasian Times,* September 8, 2021, https://eurasiantimes.com/pakistan-races-ahead-of-india-in-drone-technology-is-4th-country-to-deploy-ucavs-in-combat-ops/.
46 See Tweet of 'Additional Directorate General of Public Information, IHQ of MoD,' August 26, 2022, https://twitter.com/adgpi/status/1563067869436735489?ref_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E1563067869436735489%7Ctwgr%5Ee219ce8d920644797a93013ab13ef1e08eb05271%7Ctwcon%5Es1_&ref_url=https%3A%2F%2Fwww.indiatoday.in%2Findia%2Fstory%2Findian-army-inducts-swarm-drone-systems-1992907-2022-08-26.
47 Hussain, 'Drone Attacks on Indian Air Force Base.'
48 Yuna Huh Wong et al., *Deterrence in the Age of Thinking Machines* (Santa Monica, C.A.: RAND Corporation, 2020), pp. 60–61.
49 See James N. Miller, Jr. and Richard Fontaine, *A New Era in U.S.-Russian Strategic Stability How Changing Geopolitics and Emerging Technologies Are Reshaping Pathways to Crisis and Conflict* (Cambridge, M.A.: Belfer Center, Harvard Kennedy School; Washington, D.C.: Center for New American Security, 2017).
50 Lora Saalman, 'Chinas Artificial Intelligence: Enabled Offense Hypersonic Glide Vehicles and Neural Networks,' *Artificial Intelligence, China, Russia, and the Global Order*, ed. Nicholas D. Wright (Montgomery, A.L.: Air University Press, 2019), pp. 162–165.
51 Amy F. Woolf, 'Conventional Prompt Global Strike and Long-Range Ballistic Missiles: Background and Issues,' *Congressional Research Service*, January 8, 2019, https://apps.dtic.mil/sti/pdfs/AD1066007.pdf; James M. Acton, 'Hypersonic Boost-Glide Weapons,' *Science & Global Security* 23, no. 3 (2015): pp. 191–219, https://doi.org/10.1080/08929882.2015.1087242; and Richard H. Speier, George Nacouzi, Carrie Lee and Richard M. Moore, *Hypersonic Missile Nonproliferation: Hindering the Spread of a New Class of Weapons* (Santa Monica, C.A.: RAND Corporation, 2017), https://www.rand.org/content/dam/rand/pubs/research_reports/RR2100/RR2137/RAND_RR2137.pdf.
52 Richard Stone, 'National Pride Is at Stake. Russian, China and United States Race to Build Hypersonic Weapons,' *American Association for the Advancement of Science*, January 8, 2020, https://www.sciencemag.org/news/2020/01/national-pride-stake-russia-china-united-states-race-build-hypersonic-weapons.
53 Kelsey Davenport, 'India Tests Hypersonic Missile,' *Arms Control Association,* October, 2020, https://www.armscontrol.org/act/2020-10/news/india-tests-hypersonic-missile.
54 Vivek Raghuvanshi, 'Watch India Test Its New Homemade Hypersonic Vehicle,' *Defense News*, September 9, 2020, https://www.defensenews.com/global/asia-pacific/2020/09/09/india-tests-homemade-hypersonic-vehicle/.
55 Ghazala Yasmin Jalil, 'Implications of Emerging Hypersonic Missile Race,' *Hilal Magazine*, December 3, 2020, https://www.hilal.gov.pk/eng-article/detail/NDcwOQ==.html.
56 Air Marshal Waseem ud Din (Retd.), Dr. Ali Javed Hashmi and Abdullah Rehman Butt, 'Development of Pakistan's Space Program,' ed. Sarah Siddiq Aneel, Centre for Aerospace and Security Studies, Issue Paper 3 (August 2021), p. 15.
57 Abdullah Rehman Butt, 'Role of Space Capabilities in the Russia-Ukraine War,' *Centre for Aerospace and Security Studies,* April 28, 2022, https://casstt.com/post/role-of-space-capabilities-in-the-russia-ukraine-war/618.

58 Larry Greenemeier, 'GPS and the World's First "Space War",' *Scientific American,* February 8, 2016, https://www.scientificamerican.com/article/gps-and-the-world-s-first-space-war/.
59 David T. Burbach, 'Early Lessons from the Russia-Ukraine War as a Space Conflict,' *Atlantic Council,* August 30, 2022, https://www.atlanticcouncil.org/content-series/airpower-after-ukraine/early-lessons-from-the-russia-ukraine-war-as-a-space-conflict/.
60 Robert Farley, 'Managing the Military Problem of Space: The Case of India,' *The Diplomat,* April 19, 2021, https://thediplomat.com/2021/04/managing-the-military-problem-of-space-the-case-of-india/.
61 Anjana Pasricha, 'India Looks to Enhance Military Capabilities in Space,' *Voice of America,* June 27, 2021, https://www.voanews.com/a/south-central-asia_india-looks-enhance-military-capabilities-space/6207536.html.
62 Mian Zahid Hussain and Raja Qaiser Ahmed, 'Space Programs of India and Pakistan: Military and Strategic Installations in Outer Space and Precarious South Asian Regional Strategic Stability,' *Space Policy* 47 (2019): p. 6, https://doi.org/10.1016/j.spacepol.2018.06.003.
63 Ashley J. Tellis, 'India's ASAT Test: An Incomplete Success,' *Carnegie Endowment for International Peace*, April 15, 2019, https://carnegieendowment.org/2019/04/15/india-s-asat-test-incomplete-success-pub-78884.
64 Anil Kumar Lal, 'Space Power Security Matrix for India: Part 1,' *The Times of India,* June 15, 2022, https://timesofindia.indiatimes.com/blogs/rakshakindia/space-power-security-matrix-for-india-part-1/.
65 Sher Bano, 'Indian Militarization of Outer Space: Security Implications For Pakistan,' *Modern Diplomacy*, August 29, 2020, https://moderndiplomacy.eu/2020/08/29/indian-militarization-of-outer-space-security-implications-for-spakistan/.
66 Keith Breene, 'Who Are the Cyberwar Superpowers?,' *World Economic Forum,* May 4, 2016, https://www.weforum.org/agenda/2016/05/who-are-the-cyberwar-superpowers/.
67 Ralph Langner, 'Stuxnet's Secret Twin,' *Foreign Policy,* November 19, 2013, https://foreignpolicy.com/2013/11/19/stuxnets-secret-twin/.
68 Josh Fruhlinger, 'Stuxnet Explained: The First Known Cyberweapon,' *CSO*, August 31, 2022, https://www.csoonline.com/article/3218104/stuxnet-explained-the-first-known-cyberweapon.html; Ellen Nakashima and Joby Warrick, 'Stuxnet was Work of U.S. and Israeli Experts, Officials Say,' *The Washington Post,* June 2, 2012, https://www.washingtonpost.com/world/national-security/stuxnet-was-work-of-us-and-israeli-experts-officials-say/2012/06/01/gJQAlnEy6U_story.html.
69 Marcus Willet, 'The Cyber Dimension of the Russia–Ukraine War,' *The International Institute of Strategic Studies,* October 6, 2022, https://www.iiss.org/blogs/survival-blog/2022/10/the-cyber-dimension-of-the-russia-ukraine-war.
70 Pascale Davies, 'Cyberattacks Are Reshaping Modern Warfare. How Can Countries and Companies Protect Themselves?,' *Euronews*, August 8, 2022, https://www.euronews.com/next/2022/08/11/cyberattacks-are-reshaping-modern-warfare-how-can-countries-and-companies-protect-themselv.
71 Amna Tauhidi, 'Cyber Element in the Russia-Ukraine War & Its Global Implications,' *Centre for Aerospace and Security Studies,* August 29, 2022, https://casstt.com/post/cyber-element-in-the-russia-ukraine-war-its-global-implications/704.
72 Sanjay Goel, 'National Cyber Security Strategy and the Emergence of Strong Digital Borders,' *Connections: The Quarterly Journal* 19, no. 1 (2020): p. 73, https://doi.org/10.11610/Connections.19.1.07.
73 See 'India Brand Equity Foundation,' latest updated on August 2022, https://www.ibef.org/industry/information-technology-india.

74 Ananya Bhardwaj, 'India to Get New, "Robust" Cyber Security Policy Soon, Says PM Modi,' *The Print,* August 15, 2020, https://theprint.in/india/india-to-get-new-robust-cyber-security-policy-soon-says-pm-modi/482356/.
75 See Zafar Iqbal Cheema, 'Cyber Space Security in South Asia on 28th January 2021,' *Strategic Vision Institute,* https://thesvi.org/svi-webinar-panel-discussion-report-on-cyber-space-security-in-south-asia/.
76 Basma Khalil, 'India's Quest to Dominate South Asian Cyberspace: Challenges for Pakistan,' *Strategic Vision Institute,* https://thesvi.org/indias-quest-to-dominate-south-asian-cyberspace-challenges-for-pakistan/.
77 Jamal Abdul Nasir, 'Cyber Security Challenges and Response,' *The Express Tribune,* November 06, 2021, https://tribune.com.pk/story/2328017/cyber-security-challenges-and-response.
78 Baqir Sajjad Syed, 'Probe into Cyberattack by Indian Spy Network Launched,' *DAWN*, August 13, 2020, https://www.dawn.com/news/1574108.
79 Aamir Saeed, 'Pakistan Asks WhatsApp for Details of Users Targeted by Israeli Spyware,' *Arab News*, December 20, 2019, https://www.arabnews.pk/node/1601846/pakistan.
80 Aneeqa Safdar, 'The Emerging Threat of Indian Cyber Warfare Against Pakistan,' *Centre for Aerospace and Security Studies,* August 28, 2020, https://casstt.com/post/the-emerging-threat-of-indian-cyber-warfare-against-pakistan/246.
81 Farooq Naiyer, 'Cyber Security Outlook for Pakistan,' in *Pakistan Outlook 2020 Politics, Economy & Security*, ed. Syed Faran Rizvi (Islamabad: Islamabad Policy Institute, 2020), p. 39.
82 For more details, see Abbasi and Khan, *Nuclear Deterrence in South Asia*.

6 Deterrence Stability Mechanism: Regulating New and Disruptive Technologies

Introduction

Both India and Pakistan should avoid the reoccurrence of any military crisis that carries the potential to convert into a nuclear war. Nuclear deterrence between these two states seems to be eroding and patterns of war changing in the backdrop of advancement of nuclear technologies, evolving doctrines and force postures, the inclusion of disruptive technologies in states' inventories and suspended dialogue/peace process. Therefore, both India and Pakistan should increase their cognitive understanding of nuclear weapons to conceptualize the actual meaning of the nuclear revolution[1] and the spirit of deterrence to avert wars and secure peace. Further understanding needs to be developed on changing patterns of warfare in the backdrop of evolving conventional and nuclear doctrines and, force postures and the evolution of disruptive technologies. For example, the existing concepts of deterrence, doctrines and operational strategies have been challenged by the advent of disruptive technologies, thereby creating an emerging grey area and an increasing blur line between nuclear and conventional systems. Disruptive technologies have created a likelihood of less time for decision-making and a more complex information and diverse corridors to escalation, miscalculation and accidents, thereby increasing nuclear dangers and the risks for a breakdown of deterrence. Such a complex environment needs to be transformed into a better security environment where mechanisms to regulate nuclear and non-nuclear/disruptive technologies be discussed and implemented to reduce nuclear dangers. Thus, this chapter offers a framework to regulate existing nuclear technologies and emerging non-nuclear/disruptive technologies to achieve crisis and deterrence stability between India and Pakistan.

Creating a better security environment for crisis stability

The current security environment doesn't seem favourable to reducing risks between the two nuclear possessor states, i.e., India and Pakistan. This region is moving into risky and uncertain security settings; therefore,

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before crafting a new framework to achieve crisis and deterrence stability, it is imperative to improve the existing security environment in which states' reliance on nuclear weapons is reduced and trust built on the lines discussed below.

Flexibility to resume political CBMs

Since overt weaponization, numerous political CBMs were initiated between India and Pakistan aiming at mitigating tensions, managing crises and averting the likelihood of accidents and wars. The existing CBMs somewhat remained productive to ensure broader strategic stability but failed to avert the recurrence of numerous crises. That said, despite the failure of the CBMs, both the nuclear rivals displayed restraint during several recent crises, such as Pathankot, Uri and Pulwama/Balakot, by preventing the massive mobilization of troops, unlike the Kargil and the Twin Peaks crises. Primarily, this might be the key lesson drawn concerning escalation control that both rivals learnt from the preceding crises in South Asia[2] as they understood the potential risks attached to crisis escalation.

Nevertheless, in light of their past experiences and crises, both states always remained suspicious of each other's intentions which impacted their policy decisions[3] to improve relations. That said, the trust deficit is grown so deep after the Pulwama/Balakot crisis, which can only be repaired through a step-by-step approach. Thus, India and Pakistan, for the sake of peace and prosperity, should go a step ahead to resume political-to-political and foreign secretaries level communication channels to lessen the tense political environment that, in turn, would pave ways for progress in improving the broader relationship.

Revival of the Lahore Declaration

A renewed political commitment is needed to normalize political relations by initiating a multipronged dialogue process. To this end, both countries can immediately seek the revival of the Lahore Declaration (1999). The declaration sought to resolve issues including Jammu and Kashmir, boost information technology cooperation, ease visa regulations and promote trade. The revival of the Lahore Declaration would rebuild trust between India and Pakistan. Both states need to open CBMs between the highest levels of political-to-political leadership involving business communities. Similar to the Kartarpur initiative,[4] people-to-people and business-to-business contacts can be encouraged. Kartarpur may serve as an active trade corridor to promote religious and cultural tourism and enhance the socio-economic growth of the two states. This process may normalize the charged political environment and institutionalize the efforts to promote peace. Riaz Muhammad Khan stated, 'the two countries have to normalize

relations and build mutual trust. For normalization, it is necessary to mitigate mistrust and advance cooperation in soft areas such as trade, cultural connectivity and people-to-people dialogues and connections.'[5] Moreover, this process will generate mutual economic dependence that, in return, can moderate patterns of routine political rhetoric like propaganda, hate speech, blame gaming, visa restrictions and proxy wars. The political will to resume dialogue, change strategic mindsets, shun hate speeches and use of favourable political phrases on both sides of the borders may lead to a less hostile political environment. Through the revival of this declaration, the two states may initiate the following steps (from highest to lowest levels of priority).

Shared mechanism to address terrorism

Major problems and mistrust between the two states emanate from alleged acts of terrorism. Perception about state-sponsored terrorism is the primary cause of deadlock in negotiations and moving towards normalization of relations including the resolution of disputes such as Kashmir. That said, any terrorist attack can trigger a crisis leading to a nuclear war between India and Pakistan. This was realized by former President Musharraf and Prime Minister Singh based on which the two countries decided to form a Joint Anti-Terrorism Mechanism (JATM). The purpose of this mechanism was to build mutual trust in preventing alleged cross-border terrorism from both sides. Since its establishment, the JATM underwent a range of meetings with no tangible and workable outcomes. India blamed Pakistan for supporting non-state actors in the Indian-administered Kashmir and elsewhere in India, whereas Pakistan denied these charges. On the other hand, Pakistan blamed India for its involvement in promoting terrorism in Balochistan and other tribal areas including Karachi. However, India, in turn, also denied these allegations. Thus the JATM ended up with a blame game without offering any results-oriented solutions.

Both countries should shun the terror blame game by resuming JATM to deal with the menace of terrorism in the region. Cross-border terror-related accidents need to be transparently evaluated and investigated by the highest level of authorities in the respective countries. The outcomes of such evidence should be shared with JATM for further investigation. In turn, the respective countries should start taking legal trials accordingly with action and result-oriented outcomes. It will be a difficult process, but through consistent interaction, dialogue and substantive talks, the two states can reach a mechanism that focuses on irritants that would minimize the probability of future crises such as the attack on the Uri or Pulwama army installations. In turn, the two states can control cross-border attacks that result in the loss of life and further mistrust. This will put the two nuclear arch-rivals on a positive roll towards the resumption of CBMs on the resolution of disputes such as Kashmir.

Regional conflict management

The complexity of the Kashmir issue requires the two states to deal with it at a later stage after some dialogue has already occurred with a degree of success. Both states can build trust through talks to work on demilitarizing the LoC and reducing the frequent ceasefire violations that are the source of constant discomfort for inhabitants on both sides of the divide. If this is successful, the two countries may endeavour to strike a compromise on the settlement of their bilateral disputes such as Kashmir, keeping in mind the protection of the human rights of Kashmiris.

The Indian government's unilateral abrogation of articles 370 and 35A of the Indian constitution to integrate Kashmir fully into the Union cannot terminate the conflict and will not yield lasting peace in the region. India's unilateral abrogation of the autonomous status of Kashmir has raised a set of new challenges: one, constitutional amendments on Kashmir have undermined the efficacy of the UN resolution on Kashmir and the significance of the global institutions.[6] Thus, the diminished role of the UN in the backdrop of evolving dynamics inside Jammu and Kashmir seems to have created a deep trust deficit between India and Pakistan on the one hand and between Pakistan and the international community on the other hand. Two, the voices and participation of the eight million Kashmiri people are completely missing on India's abrogation of its constitutional articles on Kashmir. Since 5 August 2019, the Indian-administered Kashmir has been under siege. The Indian government has demonstrated its power to force people simultaneously, i.e., there remained a blanket security lockdown and a communication blockade for a very long time. Some of the Kashmiri political leaders are under house arrest, while others killed. Many journalists are being harassed and arrested. The Kashmiri people who dared to conduct a peaceful protest in the wake of the revocation of article 370 were arrested and detained in Srinagar's main jail.[7] Later on, the protesters were let free conditionally. This means the voice of the Kashmiri people is suppressed and their right to self-determination is violated. Therefore, the negotiated resolution of the Kashmir dispute with the participation of the people of Kashmir will only yield lasting peace between India and Pakistan. For this, India and Pakistan should create an environment to discuss and craft a mechanism that is politically acceptable to the people of Kashmir on this disputed territory.

The Kashmir issue is the most complicated conflict; if not resolved on the justified ground, it may trigger any aggression leading to another bigger crisis. There is a need to involve key stakeholders including the people of Kashmir, the United Nations Military Observer Group in India and Pakistan (UNMOGIP) and the U.S. as mediators for the resolution of the Kashmir dispute. The U.S.'s role is important as it enjoys a degree of leverage and influence over both India and Pakistan due to its power projection ability in the region. The U.S. may push the implementation of the UN

resolutions for a lasting solution to the Kashmir conflict. Evidence suggests that the U.S. has always played a significant role in the geopolitics of South Asia. The U.S. can also play a lead role as a mediator and peace broker to solve the issue of Kashmir through an impartial plebiscite under the auspices of the United Nations. As Khan stated:[8]

> Although the U.S. has withdrawn from Afghanistan and the relations between the U.S. and Pakistan are on and off, the U.S. interest has not diminished from South Asia. The U.S. remains interested and would like to play a significant role in managing if not resolving the outstanding issues including the core issue of Kashmir between India and Pakistan. Unlike many other countries including China, the U.S. has been a very active manager while managing the crises between the two South Asian rivals. Yet, the U.S. has failed to resolve the issues between India and Pakistan. Moreover, the U.S.'s future role as a crisis manager cannot be guaranteed.

The U.S. shrinking role would lead to encouraging India towards offensive action similar to that of the Pulwama/Balakot strikes that, in turn, has made regional crisis dynamics deeply complex. The U.S. should take a U-turn from its current position to play a real role as a crisis manager as it did in the past before 2016. Thus, the U.S.' role as an efficient crisis manager can ensure peace and stability in South Asia.

Creating a new security environment for deterrence stability

Regulating nuclear technologies

The two states have spent more time and investment crafting offensive doctrines and war-fighting strategies instead of learning how to stabilize deterrence by avoiding wars. The states continue to build reliance on nuclear weapons to achieve their strategic goals instead of using them as an instrument of peace. The two states have achieved nuclear learning, technological efficiency and sufficiency to harm each other but failed to grasp the imperatives to stabilize deterrence. For instance, deterrence theory suggests that a stable deterrence leads to restraining the intense security dilemma between rival nuclear states, while unstable deterrence leads to increased risk of unauthorized/accidental launch, misperceptions and miscalculations.

Both India and Pakistan need to understand the underlying causes of conflicts that generate threats and then find a mechanism to mitigate regional asymmetries and promote nuclear restraint. The two states may reiterate their recognition of nuclear deterrence as a factor for stability in the region and develop an understanding that neither the use of force is feasible nor the concept of total victory is achievable. Refuting strategic

adventurism, avoiding war-fighting strategies and offensive doctrines are essential considerations to promote nuclear restraint. In the February 2019 crisis, after an ill-conceived air strike at Balakot, the Indian Prime Minister threatened Pakistan with *Qatal ki Raat* (the night of the murder),[9] which could rapidly lead to the escalation of the conflict to the nuclear level. Such political behaviour and statements continue to promote escalation trends in a conflict-prone region. The following arrangements will lead the two states to stabilize nuclear deterrence and minimize the probability of a crisis.

Dialogue on threat perceptions

Strategic rivalry between adversarial states represents a clash of competing interests,[10] while arms control signifies recognition of mutual threats, often termed as mutual vulnerability, to each other's security.[11] Sustainable peace requires pursuing a common framework to stabilize the deterrent relationship, as manifested during the Cold War. In the case of South Asia, reaching a common framework on requirements for a stable relationship may help the two states to identify shared risks and explore ways to address the dangers that threaten regional peace and stability. In a scenario where one nuclear-armed state contemplates war-fighting strategies, including the use of counterforce weapons against the adversary's nuclear retaliatory capability and launching conventional aggression below the nuclear threshold, to escape mutual vulnerability vis-à-vis the other nuclear-armed state, the prospects for trust building would remain low. Hence, recognizing the fact that their nuclear capabilities hold them vulnerable against each other to form the core of nuclear deterrence is a pre-requisite and foremost condition to engage in any desirable mechanism.[12] In this regard, a strategic dialogue between Islamabad and New Delhi can facilitate discussions to identify mutual threats and vulnerabilities and eventually observe restraint on the development and deployment of certain weapon systems to address shared risks. In the absence of any communication, the two sides are likely to remain to confront the dilemma of interpreting and assessing each other's military capabilities based on worst-case scenario analysis.

Reduce reliance on nuclear weapons

India and Pakistan are required to craft a mechanism and/or take measures to create a new/less threatening security environment[13] to reduce reliance on nuclear deterrent forces. In this regard, some of the important initiatives could be taken as a CBMs toolkit: one, the foremost step should be to tackle the ever-growing conventional imbalances between India and Pakistan. For said purpose, a treaty may be signed to set up the limitations and further identify the areas that generate fear in the

other state to maximize its dependence on its nuclear deterrent forces to counterweight the conventional force imbalance. If one state relies on the nuclear deterrent forces much more against the other state, then the reliant state could incentivize the other to build its conventional force capabilities; nevertheless, this could be an expensive and risky strategy to pursue.[14] Reduction in over-reliance on nuclear deterrent forces may be mitigated by lessening the threatening security environment – seeking guidance from a comprehensive framework offered by Abbasi here[15] – instead of building more dependence on advanced conventional forces intended to fight limited wars.

Though it seems ambitious, both India and Pakistan may take on measures that neither party would implement to position their deterrent forces that may either be conventional or nuclear targeting each other for tactical objectives. The reduction in reliance on nuclear deterrent forces could lead to certain positive policy implications: This could discourage both nuclear-armed rivals to position either advanced conventional forces or nuclear deterrent forces as part of their respective strategies (military and nuclear) against one other. For instance, if India, based on its ambitious doctrines such as CSD, JDIAF and LWD, does not deploy its conventionally advanced forces against Pakistan, the latter may not certainly deploy its low-yield weapons in line with its doctrine of FSD. This could offer incentives to the states that rely on nuclear deterrent forces to hold conventional force balance. Reduced reliance on nuclear weapons will assist in decreasing the risk of the use of nuclear weapons.

Resume NCBMs to reduce risks

This region has examples of past bilateral nuclear confidence-building measures (NCBMs) between India and Pakistan such as pre-notification of flight testing of ballistic missiles, non-attack on nuclear installations, as well as restraint measures on deployments on the building of new military posts, which are specific to India and Pakistan and do not impinge on India's security interests with a third party. The bilateral arms control mechanism, the hotline between the Director-Generals of Military Operations (DGMOs)[16] and foreign secretaries, the agreement[17] on Pre-Notification of Flight Testing of Ballistic Missiles and the agreement[18] on Reducing the Risks from Accidents Relating to Nuclear Weapons were the major bilateral nuclear agreements under the guiding framework of the Lahore Declaration.[19] The NCBMs have not been proven very effective in the past and have currently got further embroiled in the backdrop of the evolving situation in Kashmir after India revoked articles 370 and 35A.

Promoting NCBMs to reduce nuclear risks is the most needed area in the security domain. Some pertinent risk reduction measures may include: One, both countries should urgently and formally expand the scope of the

ballistic missile test pre-notification agreement that was signed in 2005 to include *cruise missiles* in it. Futter also suggests, 'If there isn't already then missile test and immediate launch notification via a secure high-level hotline for each side would be a good idea. It would also clearly be a good idea not to test missiles near either the India-Pakistan (or India-China) border.'[20] Naeem Salik also asserted, 'there is also a need to bring into missile test notification agreement the notification of *cruise missiles*, including air-launched and sea/sub-sea launched cruise missiles.'[21] Two, restraint measures should be taken against the deployment of destabilizing systems which could seriously impact crises and arms control stability and initiate talks between both sides to clarify the nature of different missiles as which ones are conventional and which ones are assigned with the strategic role. Three, keep the DGMOs hotlines under all circumstances open despite their ongoing mistrust and differences developed in the backdrop of the Pulwama/Balakot crisis and the Indian striping of the autonomous status of Kashmir. Lodhi stated, 'the missing hotlines and prompt communication channels ought to be corrected [activated] on priority, otherwise one and a half billion human lives will remain in jeopardy.'[22] Indeed, the reactivation of the hotlines will help minimize the potential risks during crises. Four, the India-Pakistan 2007 agreement on the prevention of accidental and unauthorized launch of nuclear weapons 'needs to be amended to explicitly mention *delivery systems* as well or there could be a new agreement to cover inadvertent/accidental firing of missiles.'[23] Five, introducing a code of conduct on the use of media during crises as media does play a sensational role in escalating, not de-escalating, the crisis. Six, there is a serious need to clarify the alert status of missiles and targeting practices between the two countries. Finally, there is a need to get *hypersonic weapons* into CBMs to minimize the potential risks that they pose. Dual-capable HGVs that use ballistic missile launchers or nuclear HCMs deployed on bombers could be regulated under a fresh agreement (discussed below). Both states should work towards bilateral limits and ban the deployment of nuclear weapons and strategic launchers and push for the inclusion of *hypersonic weapons* in any future agreements. However, in the absence of any diplomatic process providing for such discussions, the threat of misperceptions and inadvertent escalation will continue to loom large. The two nuclear-armed states cannot continue to allow failure of diplomacy by putting the whole region and beyond at risk. Thus, the total applicability of deterrence theory is needed to stabilize deterrence, induce rational behaviour and resume communication channels.

Nuclear Risk Reduction Centers (NRRCs) need to be established that will lead to building reliable communication channels and remain functional and activated without any destruction throughout the year. The special staff may be tasked to take care of the NRRCs to exchange information relating to missile flight test notifications, cyber incidents (mechanism discussed below), information about nuclear accidents, troops' movements for

exercise and air space violations, etc. These centres will be effective to counter a situation having the potency to ignite a war between nuclear-armed neighbours.

Gain space for nuclear transparency

The two states should work towards adopting a regional approach and offer greater transparency about each other's strategic motives, doctrinal underpinnings and nuclear arsenals. Ambiguous nuclear doctrines only exacerbate security dilemmas. Nuclear transparency in South Asia requires discussions on the conditions that may prompt adversaries towards nuclear readiness and deployment. Enhanced transparency in nuclear doctrines and postures would simultaneously stabilize deterrence and build upon other improvements in bridging the trust deficit through dialogue.

India and Pakistan's nuclear doctrines are kept deliberately ambiguous, perhaps because this helps countries achieve nuclear efficiency and sufficiency. Analysts have long noted that ambiguity, however, enhances the risks of miscalculation and can make deterrence unstable. Increasing transparency in nuclear doctrine, postures and modernization plans will improve the chances of reaching deterrence stability and build upon other improvements in bridging the trust deficit through dialogue.

Given the existing mistrust, a relatively doable and comprehensive transparency regime may involve the exchange of information on deployed and non-deployed strategic systems; designating conventional or nuclear roles to dual-usable delivery systems, and ensuring separation plans on military and civilian facilities. Both countries may publish their nuclear doctrines and reduce ambiguity wherever possible. For instance, India should inform the world whether it embraces a policy of NFU or FU, a policy of flexible response or massive retaliation. Similarly, Pakistan has adopted a policy of FU due to its conventional inferiority, but it does not specify when and under what conditions it would employ low-yield weapons. It may be beneficial for Pakistan to declare its redlines to reduce the risks of accidental escalation during crises. Conversely, India should also declare its redlines. Other transparency measures may involve the adopting and sharing of a list of targeting plans or even declaring the number of warheads in their arsenals.

There is a clear understanding in Pakistan's strategic community that India's policy shift from NFU to FU may increase demand for an increased number of warheads and delivery systems with better accuracy and advanced early warning systems. If India fails to retain an NFU policy, it may push Pakistan in the direction of (a) the deployment of weapon systems at sea and land; (b) heightened readiness of arsenals; (c) an increased number of warheads and their delivery mechanisms. In all likelihood, Pakistan's expected reaction to India's shifting nuclear doctrine

would – while trying to avert nuclear conflict – lower the nuclear threshold and increase crisis instability. Thus, India and Pakistan should take action for instituting policies of nuclear restraint, as this dialogue may open up opportunities to curb the ongoing arms race and reduce the risk of accidental nuclear war.

Arms race stability

Lack of CBMs and the absence of regional arms control arrangements[24] have curtailed space for arms restraint. This, in turn, has pushed regional states in South Asia towards the adoption of offensive war-fighting strategies and counterforce postures with increased arms racing problems.

There are a few initiatives undertaken in the past such as the proposal of establishing a strategic restraint regime (SSR) in 1998; however, no further steps have been taken in this regard. Although Pakistan did propose India a nuclear restraint regime (NRR) in 1999,[25] but India categorically refused to accept. Durrani argued, 'Pakistan has already proposed strategic restraint regime with three interlocking elements: (a) nuclear restraint; (b) conventional balance; (c) resolution of core disputes, especially Jammu and Kashmir. It's up to India to take the bait.'[26] India has been using the excuse of the Chinese threat to avoid any arms control measures with Pakistan. However, India's force postures and deployments betray Pakistan specific Indian military objectives. Moreover, several arms control measures and CBMs, such as an agreement on avoidance of accidents at sea, can be contemplated, which, while stabilizing Pakistan and India equation, will not undermine India's interests vis-à-vis China.

Fundamentally, discussions should emerge on institutionalizing NRR, which should further include: (a) effective implementation of restraints on induction of destabilizing systems such as BMDs; (b) restraint on the production of further MIRVs and low-yield weapons in the future; (c) agreements on non-deployment of nuclear-capable ballistic missile systems; (d) agreements on the non-deployment of weapon systems in outer space; (e) agreement on limits on production of warheads and counting and opening up of fissile material stockpiles; and (f) creating new norms to govern and regulate disruptive technologies as discussed below.

Culture of shared non-proliferation norms

The nuclear-armed states in South Asia may consider signing a comprehensive bilateral non-proliferation agreement including the following features: (a) establish a bilateral moratorium on the non-testing of nuclear weapons;[27] (b) work together to slow down their fissile material production; (c) initiate bilateral agreement on a separation plan for all nuclear facilities, which would include opening up all civilian nuclear facilities to the International Atomic Energy Agency's (IAEA) verification; and (d) link the terms of this

non-proliferation agreement to membership of the NSG for non-signatories of nuclear non-proliferation treaty (NPT).[28]

Regulating disruptive technologies to avoid deterrence erosion

Global arrangements to control the military application of disruptive technologies

The arms race between the U.S., China and Russia to acquire disruptive technologies is growing at a much faster pace and further, these great powers are rapidly integrating the same into their military doctrines and capabilities. The dramatic advancement of disruptive technologies is seriously challenging the essence of deterrence stability, as discussed in Chapter 5. Alarmingly, there is no global arms control regime to mitigate the challenges posed by these technologies. The great powers can and should take a lead role in devising an arms control mechanism to regulate these technologies. Zafar Khan stated,[29]

> The extra-regional link factor affects the South Asian nuclear states (i.e., India and Pakistan). In this case, whatever strategically happens between the United States and Russia and/or between the United States and China, this affects China while China affects India. Arguably, India then affects Pakistan. The governing mechanism and policy restraint on the military application of AI at the top trajectory will lead to reducing the pressure on the lower trajectory.

Thus, it's important to understand the inherent dangers in the military application of AI. There is a dire need for great powers to evaluate the potential impact of these technological trends and craft appropriate measures to mitigate the possible risks posed by AI-based technologies. Lethal Autonomous Weapon Systems are the AI-based technologies that overwhelmingly threaten mankind.[30] All relevant stakeholders, such as policymakers, industries and civil society groups, require a clear deliberation about the norms and values that should create boundaries and further provide requisite guidance in the development, role and prohibition of AI-based technologies. The governments would require assistance in requisite legislation, literacy-enhancing policies and economic adaption. Therefore, governments and international institutions need to coordinate and develop mechanisms to get the optimal benefit of AI-based technologies for mankind; however, the same frameworks should make efforts to counter the threats emanating from these technologies in the military domain.

There is no formal instrument for arms control regulations which determines a correlation between nuclear weapons and disruptive technologies or mitigates their military shocks/impacts. If regulatory mechanisms lag, states will exploit open space to pursue ambitious policies based on

opportunities offered by these new technologies and their intersection with nuclear doctrines. Therefore, initially, there is a need to move towards a broader conception for the reduction of risks emanating from disruptive technologies, which may initially not necessarily be focused on promoting treaties, or formal/legally binding agreements but on the creation of norms. In the second stage, a separate formal mechanism can be created to oversight the military applications of disruptive technologies. In the third stage, a global legally binding arrangement can be instituted to control and ban the negative/offensive use of disruptive technologies in the military domain. Thus world leaders should work towards a specific ban on the deployment of autonomous nuclear weapon systems. The current technology holders who seek to preserve their military advantage by opposing any legally binding controls on the hostile use of disruptive technologies should recognize that, given the prevalence and pervasiveness of these technologies, it would not be possible to prevent for long their hostile uses by states and non-state actors.

Regarding hypersonic technologies, the U.S., China and Russia, all three great powers are aggressively on the road to developing and deploying speedy and lethal hypersonic missiles. The rapid concentration and employment of these weapon systems not only assist in overpowering the adversary but also seriously erode the deterrence stability. The hypersonic weapons system should be included in the existing arms control mechanisms or develop new frameworks to mitigate the potential risks associated with this technology.[31] One of the existing arrangements is the Missile Technology Control Regime (MTCR) which should continue to monitor and consider possible expansion of its controls on dual-use items to maintain a system of export controls that adequately targets HGVs and HCMs.[32] Further, bilateral frameworks such as New Strategic Arms Reduction Treaty (START) between the U.S. and Russia can also be used as a catalyst in this regard. For instance, the dual-capable HGVs used with the ballistic missile launchers or nuclear HCMs installed on the bombers could be managed under similar sorts of frameworks. Nevertheless, the leaders, academicians and civil society groups should encourage the great powers to include hypersonic weapons in the existing or future agreements.[33]

Concerning space-based technologies, given the emerging strategic picture and the risks posed by the entanglement of space and nuclear operations, there is a clear need to ensure that those in power understand the role of space in nuclear operations and that how this reliance creates new escalation pathways. There is a need to examine the possibility of restrictions or even a ban on ASAT weapons or a ban on attacking certain satellites, such as nuclear early warning, that are central to stability. Building on the draft proposal for an International Code of Conduct for Outer Space Activities should continue to pursue confidence building and elite-level education on the uses of outer space and the escalatory potential of counter-space operations.[34]

Additionally, cyber warfare also generates multi-faceted nuclear risks that can majorly impact in two ways: One, it can be employed to seriously undermine the safety and security of nuclear materials and respective nuclear installations' operations; Two, it can challenge states' C2 systems. While there is no formal mechanism to overcome these cyber threats, there is a need for great powers and international institutions to play their part in cyber–nuclear risk reduction. For instance, these initiatives might encompass continued efforts made via the UN Open Ended Working Group to create cyber norms and also intensive risk reduction negotiation between the nuclear-armed states. The international community might also use the CD forum to promote the idea of an agreement on non-hacking into nuclear command and control systems or issue joint declarations about the risks of the cyber-nuclear interface.[35] Civil society groups and other relevant institutions may also be taken in the loop to create awareness and generate pressure on the policy apparatus. For instance, the research work conducted by civil society and other relevant INGOs such as Nuclear Threat Initiative (NTI)[36] and RAND[37] might also be useful in identifying the likely threats to information security and data integrity, as well as implications for personal and institutional privacy.

Regional arrangements to control the military application of disruptive technologies

The nuclearized South Asia does not lag and is also on the road to acquiring disruptive technologies where India is heavily investing in AI-based technologies concerning its military application to counter China while forcing Pakistan to maximize its capabilities vis-à-vis India.

Kamran Akhtar suggests,[38]

> The emergence of new technologies can seriously undermine deterrence stability in South Asia and lower the threshold for war. Agreed measures for transparency and arms control are therefore imperative. Yet the prospects for the same are bleak since India has clubbed itself with the technology leaders who are not willing to accept any limitations on their freedom of choice and actions in terms of weapons development and deployments. Such a situation leaves no option for the adversary but to look at countermeasures.

Thus, drawing learning lessons from the preceding sections, India and Pakistan should work on minimizing risks posed by non-nuclear/disruptive technologies. Although governing disruptive technologies is not an easy task, there are possibilities to minimize and mitigate some of the risks posed by these technologies. The following steps need to be charted to avoid negative applications of AI-based disruptive technologies. With the fast development

in the field of AI, the concerns are how to use AI for military advantages. In this regard, the top priority of the technology holders should be on the military use of AI and machine learning, which includes – but is not limited to – LAWS, i.e., machines designed to independently search for select and engage targets. The use of AI tools has been fraught with the risks of unintentional harm, but some states are now weaponizing AI, as discussed in the preceding chapter.

Reducing military application of AI

Pakistan is in favour of a pre-emptive ban on all types of AI-based weapon systems as AI-based disruptive technologies will lead to undermine the deterrence stability in the region and push states to a new AI arms race in South Asia. Both states should understand that the human delegation of authority to autonomous machines for decisions-making is perilous as these weapons do not possess human traits such as empathy, reason, intellect and compassion that are essentially required to make a moral and perceptive decision during a crisis. The autonomous systems fail to assess the effects of their operations, the level of destruction and collateral damage involved in a war-prone densely populated region such as South Asia. There are a number of CBMs that states should initiate to understand each other's intentions and potential capabilities in AI domain: (a) focus on reducing possibility of military use of AI; (b) initiate measures related to the use of AI in connection with nuclear weapons and deterrence; (c) show transparency on their policies, strategies and intensions regarding application of AI; (d) initiate risk-reduction measures on use of AI; (e) share general information about ongoing and planned R&D activities and information exchange programs on their potential capabilities in AI domain; (f) show transparency by disclosing AI-related strategies, policies and military doctrines that outline how a state intends to use or not to use AI-related technologies in a military context; (g) share information on how states implement human control over the use of AI in early warning systems and ensure each other that nuclear launch decisions are not fully automated; (h) actively communicate about non-threatening activity involving AI systems that could be misinterpreted as threatening i.e., military exercises, operational tests and exploration of the seabed for peaceful purposes; (i) both the states should agree on non-development of a fully automated nuclear command-and-control system. Such an agreement would draw a clear redline but, at the same time, would not prevent the development of other types of AI capability that nuclear-armed states value for their strategic and national security interests; (j) hold dialogue on the establishment of norms to regulate disruptive technologies; (k) initiate formal treaties or the implementation of restrictions on certain technologies, their future mechanisms of control, restraint and risk are important; finally, build agreements on do's and don'ts and introduce control measures on their possession and use in military applications for battlefield use.

Regulate UAVs/Drones

The UAVs/drones are remotely controlled dual-use devices. They are popular in commercial and military sectors because of their affordability, convenience/increased safety and flexibility and utility in better Reconnaissance, Surveillance and Target Acquisition (RSTA). Drones provide real-time information on targets' positions, terrain and enemy movements to commanders on the ground. Compared to high-altitude aircraft, drones can take closer footage without compromising the quality of both photos and video. This is why states in the South also build heavy reliance on the military use of UAVs. There is no provision in international law specifically referring to the use of drones. What is used instead as the main legal reference in the Geneva Convention[39] that established norms for international humanitarian law in times of war? The Geneva Convention has laid the ground for what is called international humanitarian law and international human rights laws that strive to protect civilians and can be used as a reference in the context of attacks by military drone strikes on non-combatants.[40] The achievement of these objectives is no easy task as the regulation of ever-increasing drone-related operations and activities is proving to be a challenge for national aviation safety authorities around the world not just in South Asia. Organizations such as the International Civil Aviation Organization (ICAO) and the European Union Aviation Safety Agency (EASA) have vital roles to play in this regard and, more broadly, by sharing best practices that can be implemented by countries seeking to improve or introduce regulations to deal with UAVs.

Regional plans to mitigate effects of hypersonic weapons

The speed of the hypersonic missile will make it very difficult for India and Pakistan to intercept it through their respective defence systems, thus jeopardizing the strategic stability in nuclear South Asia. The question, such as how the hypersonic weapons system will impact the nuclear posture of the rival states, is difficult to ascertain; however, what is clear is that any disruptive technologies such as hypersonic missiles, will encourage the possessor state to go for the first strike.[41] In contrast to the technological sophistication enjoyed by great powers such as the U.S., China and Russia, the hypersonic weapons system is in embryonic stages in South Asia. For instance, India is in the initial stages of developing hypersonic technologies such as BrahMos-2 and Hypersonic Technology Demonstrator Vehicle (HSTDV), whereas Pakistan is considered to have no such development programs. The U.S., China and Russia have not reached any understanding to manage the hypersonic weapons system. However, if the great powers conclude a treaty on the said issue, in turn, a probable hypersonic rivalry between India and Pakistan can be avoided by making India part of the treaty.[42] The prospects concerning the arms control regime to halt the spreading of hypersonic

missiles seem to be bleak and the gravity of the situation demands all-out efforts at the global and regional levels to mitigate the emerging threats posed by these technologies.

Regulating regional space-based technologies

The development of space-based technologies is alarming as it is seriously undermining the deterrence stability in South Asia (discussed in Chapter 5). India is on a fast track to developing space capabilities to maximize its military strength and robust mechanism for location identification and navigational support. India's technological advancement in space is generating security threats for nuclear China and Pakistan. For instance, India's induction of ASAT capability will encourage it to build reliance on FU policy and counterforce posture against Pakistan. India's offensive doctrinal modifications and technological innovations along with international support in terms of its membership of MTCR are vital steps towards the modernization of its space program.[43] These developments will negatively impact strategic stability and may end up in a stern arms-racing problem in conflict-prone South Asia. Thus, the great powers need to make efforts to resolve the Prevention of Arms Race in Outer Space (PAROS) treaty in the CD, thereby halting the vicious arms race between India and Pakistan for ensuring strategic stability.

Regional cyber norms

In the cyber domain, as discussed above that the growing incidents of cyber-attacks on critical infrastructure in South Asia could be detrimental to strategic instability and call for the need for cyber CBMs between both countries. Knowing the fact that cyber-attacks lack the element of attribution and an incident similar to 2019's cyber-attack on the Kudankulam nuclear power plant in India or anywhere in South Asia may bring both countries close to war. India and Pakistan should expand the scope of the 1988 agreement[44] on non-attack on each other's nuclear installations to include avoidance of cyber-attacks. Agreement on non-attack of each other's critical infrastructure through cyberspace can work together on the definition of critical infrastructure to include C2 systems and nuclear facilities in it. Tughral Yamin has envisaged a list of CBMs which can be instrumental in fostering trust between the nuclear-armed neighbours in cyberspace[45]:

> a) agreement to restrain from Cyber Targeting of Civilian Nuclear Installations[46] and Critical Infrastructure;[47] b) a cyber-hotline similar to the one which exists between Russia and the U.S.[48] may be established between India and Pakistan to exchange critical information in case of a cyber-attack especially when the identity of the attacker is unknown; d) agreement to abstain from Online Propaganda;[49]

e) agreement on prohibiting cyber theft of intellectual property and commercial secrets, cooperation and exchanging information to hunt down cyber criminals, promoting norms for responsible state behaviour in cyberspace, establishing a bilateral high-level cyber dialogue on cybercrimes; and f) establishing a Regional Computer Emergency Response Teams (CERTs) under the auspices of Shanghai Cooperation Organization (SCO).

Such a regional approach will help counter cyber crimes and build trust between India and Pakistan.

In sum, the current AI renaissance is bound to have an impact on nuclear weapons and doctrines. These steps suggested above could help reduce nuclear-armed states' misperceptions and mistrust regarding each other's intentions and capabilities in the field of disruptive technologies. The adoption of recent advances in machine learning and automation in the military sphere, and in nuclear weapons, in particular, will be incremental and take time. However, it is not too early for states to look for policy options and identify opportunities to tackle the challenges presented by these technologies on the lines suggested above.

Conclusion

Nuclear deterrence in South Asia is eroding and patterns of warfare changing in the backdrop of evolving doctrines, strategic postures, the inclusion of advanced nuclear and non-nuclear/disruptive technologies in states' inventories. Therefore, the two states need to work together to create a better security environment to achieve crisis and deterrence stability.

To achieve crisis stability; first, a renewed political commitment is needed to normalize political relations by opening up political, economic and cultural CBMs. For this, the revival of the Lahore Declaration would rebuild trust between India and Pakistan; second, on preventing the eruption of future crises, there is a need to assert control over proxies from any side. Under the Lahore Declaration, the revival of JATM involving the two governments will lead to preventing alleged cross-border terrorism; third, on crisis management, India's abrogation of the autonomous status of Kashmir cannot terminate the conflict and will not yield lasting peace as the voices and participation of the eight million Kashmiri people are completely missing on the Indian decision. In this context, the involvement of the key stakeholders, including the people of Kashmir, UNMOGIP and the U.S., as mediators is needed under the parameters of the UN for the resolution of the Kashmir dispute.

To achieve deterrence stability, it is imperative that India and Pakistan hold a dialogue to regulate nuclear technologies and non-nuclear disruptive technologies in segregated forms. To deal with nuclear technologies, a strategic dialogue between Islamabad and New Delhi to achieve deterrence

stability can facilitate discussions to identify mutual threats and vulnerabilities and eventually observe restraint on the development and deployment of certain weapon systems to address shared risks. The bilateral arms race stability mechanism, resumption of military-to-military hotlines and revitalization and adaptation of bilateral nuclear agreements (discussed above) under the guiding framework of the Lahore Declaration should be immediately resumed. New discussions should emerge that include effective implementation of restraints on induction of destabilizing systems; non-deployment of nuclear-capable ballistic missile systems; limits on production of warheads and counting and opening up of fissile material stockpiles, pre-notification of land, air and sea/sub-sea launched cruise missiles, the accidental firing of missiles, CBMs on the alert status of missiles and targeting practices, non-development and deployment of hypersonic weapons, dual-capable HGVs and HCMs.

Within this, India and Pakistan should deal with challenges posed by non-nuclear/disruptive technologies to avoid erosion of nuclear deterrence based on three-step approach: (a) Initially, there is a need to move towards a broader conception for the reduction of risks emanating from disruptive technologies which may initially not necessarily be focused on promoting treaties, or formal/legally binding agreements but on the creation of awareness and norms; (b) a separate formal mechanism can be created to oversight the military applications of disruptive technologies; and (c) a legally binding arrangement can be instituted to control and ban the negative/offensive use of disruptive technologies in the military domain.

All these measures suggested in the chapter will be instrumental to mitigate the nuclear risks and threats associated with the unregulated military use of emerging technologies amidst ambitious doctrinal changes and induction of nuclear weapons. The above incremental approaches may lead to creating deterrence stability in the South Asian region.

Notes

1 Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (London: Cornell University Press, 1989).
2 Zafar Khan, 'Crisis Management in Nuclear South Asia: A Pakistani Perspective,' in *Investigating Crises: South Asia's Lessons, Evolving Dynamics and Trajectories*, eds. Sameer Lalwani and Hannah Haegeland (Washington, D.C.: Stimson Center, 2018), pp. 143–162.
3 Asma Khalid, 'Confidence Building Measures between India-Pakistan: Hope for Bilateral Peace,' *Centre for Strategic and Contemporary Research,* May 14, 2021, https://cscr.pk/explore/themes/defense-security/confidence-building-measures-between-india-pakistan-hope-for-bilateral-peace/.
4 Tridivesh Singh Maini, 'The Kartarpur Corridor and India-Pakistan Economic Linkages,' *The Diplomat,* November 16, 2019, https://thediplomat.com/2019/11/the-kartarpur-corridor-and-india-pakistan-economic-linkages/.
5 One of the Authors' interview with Riaz Muhammad Khan.

6 On January 20, 1948, the UNSC adopted a resolution for a peaceful resolution of the Kashmir dispute. The commission comprising three members was set up where one member each was to be chosen by India and Pakistan and the third member was required to be selected by the commission.
7 Riyaz Wani, 'Life Under Siege in Kashmir,' *The Diplomat*, January 21, 2020, https://thediplomat.com/2020/01/life-under-siege-in-kashmir/.
8 One of the authors' interview with Zafar Khan.
9 Jeffrey Lewis, 'Night of Murder: On the Brink of Nuclear War in South Asia,' *Nuclear Threat Initiative,* November 6, 2019, https://www.nti.org/analysis/articles/night-murder-brink-nuclear-war-south-asia/.
10 Andrew Kydd, 'Arms Race and Arms Control: Modelling the Hawk Perspective,' *American Journal of Political Science* 44, no. 2, (2000): p. 229, https://doi.org/10.2307/2669307.
11 Sufian Ullah, 'Arms Control in Crisis: An Assessment of Contemporary Trends,' *Islamabad Policy Research Institute Journal* 20, no. 2 (2020): p. 125.
12 Marek Thee, 'The Doctrine of Nuclear Deterrence: Impact on Contemporary International Relations,' *World Futures: The Journal of New Paradigm Research* 24, no. 1 (1988): p. 65, https://doi.org/10.1080/02604027.1987.9972060.
13 See Rizwana Abbasi, *Building a Road to Nuclear Disarmament: Building the Gap between Competing Approaches* (London: Routledge, 2021).
14 John J. Mearsheimer, 'Nuclear Weapons and Deterrence in Europe Source,' *International Security* 9, no. 3 (Winter 1984–1985): pp. 20–21, https://muse.jhu.edu/article/446100.
15 See Abbasi, *Building a Road to Nuclear Disarmament*.
16 See Michael Krepon, ed., *Nuclear Risk Reduction in South Asia* (New York: Palgrave Macmillan US, 2004).
17 See 'Agreement between India and Pakistan on Pre-Notification of Flight Testing of Ballistic Missiles,' *Stimson Center,* October 25, 2012, https://www.stimson.org/2012/agreement-between-india-and-pakistan-on-pre-notification-of-flight-tes/.
18 See 'Confidence-Building and Nuclear Risk-Reduction Measures in South Asia,' *Stimson Center,* June 14, 2012, https://www.stimson.org/2012/confidence-building-and-nuclear-risk-reduction-measures-south-asia/.
19 See 'Lahore Declaration,' *Nuclear Threat Initiative*, https://www.nti.org/education-center/treaties-and-regimes/lahore-declaration/.
20 One of the authors' interview with Andrew Futter, Professor in International Politics, University of Leicester.
21 One of the authors' interview with Brig (Retd.) Naeem Salik, Senior Research Fellow (Non-Resident), Center for International Strategic Studies, March 23, 2022.
22 One of the authors' interview with Lodhi.
23 One of the authors' interview with Salik.
24 Zafar Khan, 'Balancing and Stabilizing South Asia: Challenges and Opportunities for Sustainable Peace and Stability,' *International Journal of Conflict Management* 30, no. 5 (2019): pp. 589–614, https://doi.org/10.1108/IJCMA-08-2018-0093.
25 P. R. Chari, 'Nuclear Restraint, Risk Reduction, and the Security-Insecurity Paradox in South Asia,' in *Nuclear Risk Reduction in South Asia*, ed. Michael Krepon (New York, N.Y.: Palgrave Macmillan US, 2004), p. 19.
26 One of the authors' interview with Asif Durrani, Pakistan's former Ambassador.
27 See 'Pakistan offers India Moratorium on Nuclear Tests,' *The Express Tribune*, August 17, 2016, https://tribune.com.pk/story/1164259/pakistan-offers-india-moratorium-nuclear-tests.

28 Rizwana Abbasi, 'Addressing Nuclear Non-Proliferation and Disarmament Challenges in South Asia,' *E-International Relations* (January 6, 2018), https://www.e-ir.info/2018/01/06/addressing-nuclear-non-proliferation-and-disarmament-challenges-in-south-asia/.
29 One of the authors' interview with Khan.
30 Kai-Fu Lee, 'The Third Revolution in Warfare,' *Atlantic Council,* September 11, 2021, https://www.theatlantic.com/technology/archive/2021/09/i-weapons-are-third-revolution-warfare/620013/.
31 Heather Williams, 'Asymmetric Arms Control and Strategic Stability: Scenarios for Limiting Hypersonic Glide Vehicles,' *Journal of Strategic Studies* 42, no. 6 (2019): pp. 789–813, https://doi.org/10.1080/01402390.2019.1627521.
32 Kolja Brockmann and Dmitry Stefanovich, *Hypersonic Boost-Glide Systems and Hypersonic Cruise Missiles Challenges for the Missile Technology Control Regime* (Stockholm: SIPRI, 2022), pp. iii–iv.
33 Andrew Futter, 'Explaining the Nuclear Challenges Posed by Emerging and Disruptive Technology: A Primer for European Policymakers and Professionals,' *Non-Proliferation and Disarmament Papers*, no. 73 (2021): p. 4.
34 Futter, 'Explaining the Nuclear Challenges,' p. 14.
35 Futter, 'Emerging and Disruptive Technology,' p. 13.
36 See 'Addressing Cyber-Nuclear Security Threats,' Nuclear Threat Initiative, https://www.nti.org/about/programs-projects/project/addressing-cyber-nuclear-security-threats/.
37 See RAND Corporation, https://www.rand.org/topics/cybersecurity.html.
38 One of the authors' interview with Akhtar.
39 The Geneva Conventions are four treatises and three additional protocols that establish international legal standards for humanitarian treatment in war.
40 Filip Noubel, 'Drone Warfare: Can Humanitarian Law Catch up with the Technology?,' *Global Voices,* March 30, 2022, https://globalvoices.org/2022/03/30/drone-warfare-can-international-humanitarian-law-catch-up-with-the-technology/.
41 Zafar Khan, 'Acquisition of Emerging Technologies by India,' *The Express Tribune,* September 24, 2022, https://tribune.com.pk/story/2378202/acquisition-of-emerging-technologies-by-india.
42 Samran Ali, 'Hypersonic Weapons Affects South Asia Too,' *Arms Control Association*, July/ August 2019, https://www.armscontrol.org/act/2019-07/features/hypersonic-weapons-affect-south-asia-too.
43 A. Nawaz Khan, 'India as a Space Super Power: A Threat to South Asian Strategic Stability,' *STRAFASIA,* March 31, 2019, https://strafasia.com/india-as-a-space-super-power-a-threat-to-south-asian-strategic-stability/.
44 See 'India-Pakistan Non-Attack Agreement,' *Nuclear Threat Initiative*, https://www.nti.org/education-center/treaties-and-regimes/india-pakistan-non-attack-agreement/.
45 Tughral Yamin, *Developing Information-Space Confidence Building Measures (CBMs) between India and Pakistan,* no. SAND2014-4934 (Albuquerque: Sandia National Laboratories, 2014), https://www.sandia.gov/app/uploads/sites/148/2021/07/SAND2014-4934-2.pdf.
46 Article 1 of the 1988's Agreement on the Prohibition of Attack against Nuclear Installation and Facilities between India and Pakistan could be modified by making an explicit reference to cyber-attacks.
47 The 1988s Agreement on the Prohibition of Attack against Nuclear Installation and Facilities may be signed, which will prohibit the targeting of critical infrastructure (Financial Systems, Banking Sector, Electric Grids, Water Supply Systems, Civilian Aviation Systems, and Health Systems) by cyber means.

48 Timothy Farnsworth, 'U.S., Russia Discuss Cyber Hotline,' *Arms Control Association,* https://www.armscontrol.org/act/2012-05/us-russia-discuss-cyber-hotline; Ellen Nakashima, 'US and Russia Discuss Hotline for Cyber Incidents,' *Atlantic Council,* April 26, 2012, https://www.atlanticcouncil.org/blogs/natosource/us-and-russia-discuss-hotline-for-cyber-incidents/.

49 In this pact, both countries expressed their commitment to take effective measures against the dissemination of mischievous news or opinion which may provoke communal hatred and not permit propaganda which could be detrimental to the territorial integrity and may incite war between both countries. In this regard, the Liaquat-Nehru Pact of 1950 could serve as a template for such an agreement.

Conclusion

Crisis dynamics and deterrence fragility

The Indo-Pakistan enduring rivalry, animosity and militarism led them to the acquisition of nuclear weapons. It is generally understood that nuclear weapons guarantee peace and resolve complex security problems between rival states. Additionally, deterrence theory suggests that stable deterrence leads to preventing war, preserves peace and states behave rationally. However, overt nuclearization, instead of guaranteeing total peace, led India and Pakistan into limited and sub-conventional insurgencies while challenging the spirit of nuclear deterrence. For example, nuclear deterrence stabilized the region at the strategic level while peace became precarious and war likely at the sub-conventional level between the nuclear rivals. Hence, the advent of nuclear weapons indicated an increased frequency of crises while a gradual reduction in the scale of violence and evident fragility of nuclear deterrence.

Although, the advent of nuclear weapons led the two states to somewhat create a new security environment under the premise of the Lahore Declaration. Through this declaration, a mutual understanding was reached towards the management of relationships and avoidance of accidental and unauthorized use of nuclear weapons, avoidance of nuclear race, as well as an aversion to both non-conventional and conventional conflicts. However, states failed to behave rationally as the Lahore agreement lost impetus in the wake of the 1999 Kargil War.

The Kargil crisis was inevitable for Pakistan for two reasons: (a) its compulsive response to the Indian intrusion of the Siachen Glacier and (b) internationalization of the Kashmir issue while using nuclear weapons as a bargaining chip. Nevertheless, the Kargil conflict was a hastily crafted misadventure and an irrational move based on Pakistan's *compellence strategy*, which was retaliated by India's *deterrence by punishment* and asymmetric response via its air power to deny further incentive to Pakistan for conflict escalation. The conflict was deliberately crafted limited in its scale and objectives due to fear of the use of nuclear weapons. Conclusively, the Kargil crisis resulted in a stability-instability paradox by invalidating the

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notion and spirit of nuclear deterrence. The two states, on the one hand, learnt that a limited war can be fought and won under the nuclear overhang, consequently, proxies and cross-border terrorism became new standard patterns of bilateral engagement. On the other hand, the two states learnt how to behave rationally by adopting a policy of restraint, reducing the scale of violence and controlling crisis escalation.

India and Pakistan, after the Kargil War, made some efforts to normalize bilateral relations. For example, India undertook a peace initiative and announced a unilateral ceasefire which Pakistan reciprocated.[1] This arrangement resulted in a historic two days Agra Summit between the two states in July 2001. The discussions revolved around a proposal on nuclear risk reduction, issues involving the Kashmir dispute and alleged cross-border terrorism. There was some progress achieved; however, the expected end/or outcome did not come through.

Notably, amid the peace process, another incident reckoned as the Twin Peaks Crisis erupted as a result of the two successive violent attacks in India and the Indian-administered Kashmir in 2001 and 2002 led by the militant groups such as LeT and JeM. The blame game such as India accusing Pakistan of backing Jihadi groups while Pakistan denied such charges further heightened tensions between the two nuclear rivals. India launched Operation Parakram involving 500,000 troops to take punitive measures against Pakistan for its alleged support to the terrorist outfits. Pakistan reciprocated by counter-mobilization. This tension, in turn, compelled the U.S.' intervention as a mediator that resulted in the de-escalation of the conflict. Importantly, in contrast to the previous crisis, both rival states, this time had adequate nuclear stockpiles to wreak havoc on each other, but the crisis did not escalate into a major conventional war or threat of nuclear war. To conclude, India's *compellence strategy* was dominated by Pakistan's *deterrence by punishment* policy this time. Nuclear deterrence failed to avert the crisis, but it succeeded in de-escalating it. The Twin Peaks crisis indicated increased space for proxy/limited wars under the nuclear overhang with the reduced and yet controllable scale of violence.

As a result, the two states made some efforts to normalization of the relations by expressing intentions to resolve all the outstanding issues including the Kashmir dispute. In this regard, India initiated a limited withdrawal of the forces from the border in the fall of 2003, which was reciprocated by Pakistan.[2] The then Indian Prime Minister Vajpayee took the lead on the resumption of the dialogue process with the appointment of the High Commissioner, the opening of the communication and transportation channels and people-to-people contact. Vajpayee and Musharraf expressed[3] their resolve for normalization of the relations at the 12th SAARC Summit that was held in Islamabad. One of the significant developments, concerning the resolution of the Kashmir dispute, was the four-point formula proposed by President Musharraf. The Musharraf formula met divergent and diverse responses from Pakistan, Kashmir and India[4] and could not be materialized.

Indeed, cross-border terrorism remained a recurring pattern of engagement between the two states in a nuclearized environment. The Mumbai terrorist attacks of 2008 sparked another crisis for which India considered LeT, non-state actors responsible while accusing Pakistan of backing the militants to launch the attack. India further threatened to launch aerial surgical strikes across the LoC and international border to hit the alleged terrorist camps located in Pakistani territory to compel the latter to take action against the terrorist outfits. However, India could not practically materialize its offensive war-fighting strategy/surgical strikes due to capability gaps that existed in its CSD (introduced in 2004). However, India projected itself as a victim of cross-border terrorism and launched a strong coercive diplomatic campaign based on its *compellence strategy* asking the international community to force Pakistan to act against the terrorist groups. Pakistan, in turn, largely condemned the attacks in the first place and responded by mobilizing its Air Force for a matching response in case India risked to launch a limited war based on CSD. Nevertheless, Pakistan extended assurances to India for its all-out support for the prosecution of the terrorists involved in this attack. As part of this investigation, the blame game resulted in an incomplete trial. Resultantly, the non-state actors gained space to spoil the peace process between India and Pakistan. More so, nuclear deterrence failed to contain terrorism while violence remained a prevailing pattern. The heavy involvement of the U.S. in Afghanistan to fight the war on terror also compelled the former towards crisis de-escalation. The U.S. played a key role in cooling the tempers of the two states to achieve its goals in Afghanistan with the help of Pakistan. To sum up, Pakistan's *deterrence by denial strategy* dominated the Indian *compellence strategy* during the Mumbai crisis as the former denied the incentive to the latter to launch surgical strikes across the international border.

India and Pakistan, on the one hand, were involved in nuclear force modernization for the early one-and-a-half decade of this Century, while on the other hand, both states were busy crafting and recrafting their war-fighting doctrines and strategies. As nuclear learning and technological advancement improved in South Asia, the frequency of crisis continued to remain on an upward trajectory. For example, three Indian army installations located in Pathankot, Uri and Nagrota came under attack in 2016. The IAF base in Pathankot came under attack on 02 January for which India placed responsibility on the Pakistani-based, defunct terrorist group, JeM, and demanded from the latter to take action against these militants. Pakistan, in turn, prosecuted and detained some members of the JeM, arrested the group leader and ensured cooperation on this deadly attack with India. With some effort, both nuclear states decided to resume comprehensive dialogue that was suspended as a result of this crisis. Both states initiated a joint investigation; however, it could not move ahead after Pakistani government stated that the incident was a staged operation by India. The peace process, in turn, was suspended.

After a short interval, another attack on the Uri military base near the LoC took place on 18 September 2016 thus killing Indian soldiers. India blamed Pakistan for backing these attacks and launched a coercive diplomatic campaign to isolate Pakistan globally, while Pakistan, in turn, denied these charges. In response to Uri, India claimed to have launched a surgical strike along the LoC to target terrorist camps. Pakistan invalidated India's claims on the 2016 surgical strikes. Thus, it seemed that India used the *compellence strategy* to force Pakistan to take action against militants while Pakistan responded with the policy of *deterrence by denial,* thereby mobilizing its forces to skip out the possibility of Indian strikes across the LoC and international border. The Uri crisis was a greater setback that derailed the peace process – which could not resume since – thereby deepening mistrust and uncertainty between the two states.

Mistrust further increased after the arrest of former Indian Naval officer, turned spy, Kulbhushan Jadhav who was operating in Balochistan under a false Iranian passport publicly confessed on Pakistan television to promoting sabotage in Karachi. Pakistan blamed India for promoting terrorism to destabilize Pakistan, whereas India denied the former's official charges of its involvement in promoting terrorism. To sum up, both India and Pakistan blamed each other for supporting and promoting terrorism as a tool to achieve their respective gains. India used the terrorism problem as a means to implement its blackmailing strategy against Pakistan to coerce the latter to accept the former's dominance in the region. Alleged cross-border terrorism and crises remained a recurring pattern of bilateral engagement between the two states.

Another crisis erupted when a native Kashmiri ambushed a paramilitary convoy, killing 40 security personnel in the Pulwama district of the state of Jammu and Kashmir on 14 February 2019. In the next few days, the situation escalated into one of the most dangerous crises of current times. In much contrast to previous patterns of strategic engagement, India conducted an aerial surgical strike first of its kind since the 1971 war at Balakot deep inside Pakistan's territory on 26 February 2019. India claimed that the surgical strike was targeted against the training camp of JeM, a terrorist outfit based in Pakistan that accepted responsibility for the Pulwama attack. In a *tit-for-tat* manner in line with its newly developed strategy of QPQP, Pakistan retaliated in such a desperate situation by locking and hitting Indian military targets and, further, shooting down Indian fighter jets as well as capturing its aircrew. India reportedly contemplated launching multiple conventional missile strikes inside Pakistan. Further, India employed Naval Submarine to enter Pakistani territory on 4 March 2019, which was intercepted by the latter closer to its territorial waters. Pakistan responded with an immediate and befitting response.

This time, U.S. public support for India throughout the crisis also crystallized Pakistan's perennial fears about Indo-U.S. collusion to undermine Pakistan's interests. Nevertheless, Pakistan's retaliatory air strikes and the

downing of the IAF fighter jet made the tone and tenor of the U.S. quickly reverted to its traditional unequivocal prioritization of immediate de-escalation. On persuasion of the U.S., Pakistan released captured Indian pilot as a goodwill gesture for peace which assisted in the de-escalation of the crisis. Although the risk of nuclear conflagration remained low during the Pulwama/Balakot crisis, however, the episode witnessed unprecedented escalation. India's deliberate choice to strike Pakistan beyond Kashmir signalled a willingness to cross new frontiers. Pakistan, too had never responded in such a *tit-for-tat* manner in previous crises under the nuclear overhang. During the Pulwama/Balakot crisis, India used a combination of both coercive diplomatic and military tools as part of a *compellence strategy*, which was overridden by Pakistan's *deterrence by denial* strategy. However, India went dangerously ahead by negating the entire logic of nuclear deterrence to establish its conventional superiority and a 'New Normal' under the nuclear overhang in line with its ambition to achieve regional hegemonic status in the region. Nevertheless, Pakistan's befitting response made it clear that there is no space for the establishment of a 'New-Normal' under a nuclear overhang. That is, it is either 'Normal' to accept the logic of nuclear deterrence or 'Abnormal' to reject or negate it. Indeed, Pakistan's befitting response to the Indian offensive seems to have seriously challenged the desire of India to establish a New Normal in India-Pakistan conflictual relations. Arguably, deterrence in the backdrop of Pulwama/Balakot strikes eroded, which was restored. Furthermore, new developments such as the manifestation of Indian offensive doctrines, a new era of counterforce strategies and the advent of disruptive technologies (summarized in the succeeding parts) pointed towards new patterns of strategic engagement for the future in the form of smart strikes between India and Pakistan.

Crisis dynamics: compellence vs deterrence

The study finds that five crises occurred between India and Pakistan after the overt nuclearization (1998–2020) of South Asia. Nuclear weapons could not avert the recurrence of these crises, nevertheless, diluted deterrence led to de-escalate all the above crises. Out of these five events, India used *deterrence by denial* strategy only one time, during the Kargil crisis (1999), whereas it employed compellence *strategy* four times, i.e., during the Twin Peaks crisis (2001–2002), the Mumbai crisis (2008), the Uri crisis (2016) and the Pulwama crisis (2019). Importantly, during two of the crises, such as the Twin Peaks and the Mumbai crises, India used the strategy of coercive diplomacy and *the threat of use of force,* whereas it employed the *threat of use of force and limited use of force* during the Uri and the Pulwama crises to compel Pakistan to meet its demands. Conversely, Pakistan, out of five crises that occurred in the post-nuclear era, used a *compellence strategy* involving *limited use of force* only one time during the Kargil crisis. While

in the remaining four instances, Pakistan responded to India's *compellence strategy* by maintaining the *status quo* through *deterrence by punishment or denial strategies*. Importantly, the last two crises, such as Uri and Pulwama crises, are somewhat distinct from the previous instances. In the first incident, Pakistan denied and invalidated the Indian claim of having conducted a surgical strike along the LoC to target terrorist camps. While in the second incident, in contrast to the past crises, Pakistan provided a befitting response to India's limited use of force and denied the incentive for India to further escalate. In the Pulwama/Balakot crisis, India's *compellence* was overridden by Pakistan's *deterrence by denial* strategy. See Table 7.1 for details.

Interestingly, the U.S. played a significant role in shaping the crisis outcomes since the nuclearization of South Asia. Out of the five crises, the U.S. actively played a role of a crisis manager in three instances such as the Kargil crisis, the Twin Peaks crisis and the Mumbai crisis, whereas it remained reluctant initially to play an active role as a crisis manager during the Uri and the Pulwama crises. However, U.S. back-channel diplomacy did work during the last two events to de-escalate the crises. See Table 7.2 for details.

To sum up the argument, the introduction of nuclear weapons has changed the conflict dynamics while shifting them from major and minor wars to insurgencies and surgical strikes, which points to a reduction in the scale of violence and increased frequency of crisis. Nuclear weapons could not prevent alleged cross-border terrorism or recurring patterns of crises but played a role in de-escalating them. Arguably, deterrence in the backdrop of Indian Balakot surgical strikes eroded, which was restored, but its spirit was challenged. More so, new developments such as states' evolving offensive doctrines, a new era of counterforce strategies and the advent of disruptive technologies (summarized below) pointed towards new patterns of warfare between India and Pakistan.

Table 7.1 Post-Nuclearization Era: Compellence vs Deterrence

		India's Strategy		*Pakistan's Strategy*		
		Coercion		*Coercion*		
Sr. No	*Year/Crisis*	*Compellence*	*Deterrence*	*Compellence*	*Deterrence*	*Scale of Violence*
1.	1999/Kargil	✗	✓	✓	✗	Low
2.	2001–2002/ Twin Peak	✓	✗	✗	✓	Low
3.	2008/Mumbai	✓	✗	✗	✓	Low
4.	2016/Uri	✓	✗	✗	✓	Low
5.	2019/Pulwama	✓	✗	✗	✓	Low

Source: Developed by the authors.

Table 7.2 Post-Nuclearization Era: Role of U.S. and Conflict Outcome

S. No.	*Year/Crisis*	*Role of U.S.*		*Outcome of Conflict*
		Active	*Inactive*	
1.	1999/Kargil	✓	✗	Conflict de-escalated while Pakistan employed a compellence strategy involving limited use of force.
2.	2001–2002/Twin Peak	✓	✗	Conflict de-escalated while India employed a compellence strategy involving mobilization of forces.
3.	2008/Mumbai	✓	✗	Conflict de-escalated while India employed a compellence strategy by mobilizing its forces and active diplomatic and media campaign.
4.	2016/Uri	✗	✓	The conflict escalated while India employed compellence involving limited use of force (as per India's claim while Pakistan invalidated).
5.	2019/Pulwama	✗	✓	The conflict escalated while India employed a compellence strategy involving limited use of force.

Source: Developed by the authors.

New patterns of warfare

Nuclear deterrence seems to be eroding while smart strikes are becoming new patterns of bilateral engagement between India and Pakistan against the backdrop of evolving doctrines and strategic postures, the advancement of nuclear technologies and the advent of non-nuclear/disruptive technologies.

Manifestation of conventional doctrines

India introduced CSD in 2004 intending to conduct a limited conventional surprise attack against Pakistan to punish it for its alleged involvement in terrorism. The CSD changed not only the force posture but also the deployment patterns of the Indian military. For example, the CSD reoriented the force posture of the Indian military from defensive to offensive allowing them to conduct swift and lethal joint operations for achieving shallow territorial

gains by using their army coupled with the IAF and certain air elements of the Indian Navy. Pakistan's force posture initially remained defensive vis-à-vis India in the wake of nuclearization. India pursued aggressive designs because of its conventional superiority vis-à-vis Pakistan. To counter the threats from India, Pakistan responded to India's ambitious doctrines in a *tit-for-tat* manner and introduced corresponding doctrinal changes. For instance, to counter India's ambitious CSD, Pakistan developed low-yield weapons and FSD to offset Indian offensive designs. Moreover, Pakistan included offensive Nasr missiles in its arsenal to counter India's CSD-led IBGs. This also depicted India's aspirations of waging small-scale wars against Pakistan to hold escalation dominance in the region. Pakistan's doctrinal changes in the shape of FSD and induction of low-yield weapons in its inventories led to neutralizing India's ambitious CSD. The inclusion of offensive and war-fighting technologies in India's inventory determines its growing reliance on *compellence strategy,* while Pakistan's reliance on *deterrence* seems to have increased after the inclusion of low-yield weapons in its arsenals.

India continued to modernize its war-fighting strategies and later announced supplementary doctrines to CSD, such as JDIAF-2017 and LWD-2018, that majorly aimed to increase the integration of the Indian armed forces to conduct proactive operations in synergized manner. To be more specific, JDIAF-2017 explicitly indicated the possibility of conducting a surgical strike stratagem. The newly developed doctrines led India to adopt a proactive approach in dealing with a range of conflictual situations. For instance, a surgical strike could be employed to counter terror activities. Indian strategists opined that these pre-emptive counterforce options against Pakistan are permissible doctrinally and advantageous strategically. Likewise, the Indian LWD-2018 acknowledged that India will 'enhance punitive response options to greater depth, effect, sophistication and precision.'[5] Further, 'the Indian Army will continue to prosecute effective Counter Insurgency/Terrorism operations to ensure deterrence through punitive responses against the state-sponsored proxy wars.'[6] These doctrinal innovations brought significant changes in the strategic environment of South Asia, where the possibility of conducting limited/surgical strikes is now a part of the options available to Indian strategists. Thus, the surgical strike stratagem has become a new pattern of strategic engagement on the coercion spectrum. To be clear, the compellence strategy contradicts the phenomenon of minimum deterrence. To deter India's surgical strike stratagem based on *compellence strategy*, Pakistan declared that any such Indian military endeavour will be dealt with the *QPQP policy* response. Thus, the development of India's offensive doctrines and Pakistan's corresponding response led to a transformation like strategic engagement, which is very much evident concerning the February 2019 episode. The major war has become a receding phenomenon in a nuclearized environment, whereas new war-fighting strategies were developed and implemented to wage a limited

war or conduct small military operations. These latest doctrinal changes have created the necessary space for indulging in a LIC and surgical/smart strikes as a new pattern of engagement without crossing the nuclear thresholds. These developments made war more likely, peace precarious and deterrence fragile.

Nuclear force modernization and a new era of counterforce strategies

Against the backdrop of the global power shift, strategic competition between the U.S. and China has redefined the regional strategic architecture of South Asia. The U.S. strategic consideration of India as a net security provider in Asia and the latter's quest for its power maximization and status-driven/hegemonic role in the region has become more evident than ever before. For example, India's accumulation of power and access to the global technological market through the NSG waiver has increased weapons asymmetries, thereby undermining regional strategic stability. More so, the induction of advanced nuclear technologies and weapon systems such as BMDs, MIRVs, sea-based systems, cruise, hypersonic and short-range missiles have made deterrence stability in South Asia increasingly delicate.

India's doctrinal evolution in the backdrop of growing nuclear efficiency and sufficiency put it on an advantageous pedestal that triggers a new debate in India on the modification of the IND. The NFU policy remained the backbone of India's nuclear doctrine from the outset. Arguably, nuclear efficiency and nuclear learning have changed the Indian military strategists' mindset, which has triggered a new debate on the adoption of pre-emptive strikes as a force posture against Pakistan. Thus, India is moving away from the commitment of minimum deterrence and NFU to FU, counterforce/disarming first strikes.

India is exploring and developing options to efficiently target Pakistan's strategic nuclear systems in an early stage of conflict. Indian officials think that India will not allow Pakistan to go first. Further, if Pakistan were to use low-yield weapons against it, even against Indian forces inside Pakistan, it would effectively be opening the door to a massive Indian first strike, having crossed India's declared redlines. Nevertheless, India and Pakistan have fulfilled the requirements of counter-value targeting and are moving down the path of counterforce targeting requirements, which is indeed highly destabilizing development for peace and stability in the region. Nuclear learning has directed the two states towards the adoption of war-fighting and counterforce strategies instead of war avoidance. The counterforce war-fighting strategies will lead to aggravating arms race that, in turn, will yield destabilizing and irreversible effects. India's adherence to counterforce strategies suggests that pre-emptive strikes between India and Pakistan seem highly likely, while risks of accidental escalation cannot be ruled out. The two states are working against the direction of deterrence theory, which will make crisis and deterrence stability hard to achieve.

Disruptive technologies, deterrence erosion and new patterns of warfare

The existing concepts of deterrence, doctrines and operational strategies have been challenged by a storm of technological revolution. India and Pakistan seem to have not lagged because of a correlation between geopolitical settings and technological revolution. For example, the U.S.-China competition in this field has significantly altered the security dynamics of South Asia, where the Indo-U.S. renewed strategic alliance to outweigh China has, in turn, created security challenges for Pakistan. Certain technologies such as AI and machine learning, hypersonic weapons, drones, space-based technologies and cyber technologies are being developed in South Asia that seem to have undermined the doctrinal strategies, thereby eroding the foundation of nuclear deterrence. This has created an emerging grey area and an increasing blur line between nuclear and conventional systems, a likelihood of less time for decision-making and a more complex information environment, as well as new pathways to escalation, miscalculation and entanglement-all of which could increase nuclear dangers.

AI is likely to change the existing ways and means of war by introducing a significant level of autonomy in warfare. India, in recent years, has been actively involved in developing AI for military purposes together with its changing strategic postures that, in turn, may ultimately impact the strategic stability in South Asia. Machine learning could be used to make nuclear delivery systems capable of navigating to their target more autonomously and precisely, with less reliance on humans setting navigation and guidance parameters. India is exploring the use of machine learning to develop control systems for hypersonic vehicles that are set to increase dependency on nuclear weapons because of their swift delivery mechanisms and it could make the existing nuclear system increasingly risky.

Similarly, drone strikes have played a key role in recent conflicts. In the case of India and Pakistan, both countries have already acquired drone technology and could use these lethal drones against each other. The drone technology will act as an impetus to adopt compellence involving limited use of force, thereby creating deterrence instability. The impact of drones on warfare is such that weapons will have full autonomy to decide on whom to attack without human input. This means that the use of AI and associated autonomous systems may result more likely in crisis escalation and crisis instability by creating an environment conducive to a speedy and inadvertent escalation of crisis and conflict. Additionally, space-based weapons, sensors, defensive interceptors and the diffusion of counter-space capabilities will make space an increasingly contested military environment in South Asia. India's space-based ISR satellites would enhance its counterforce capabilities vis-à-vis Pakistan. Keeping in view India's intentions to use a *compellence strategy* involving a threat of use of force or limited use of force against Pakistan in the wake of any terrorist incident, it may

be encouraged to exploit the latter's vulnerabilities in the space to pursue its strategic objectives. Thus, maintaining deterrence against India in space will be a top priority for policy-makers in Pakistan. The disruptive technologies will be acting as a force multiplier in cyber-led warfare, too, and their potential integration with the cyber domain would also generate additional risks in conflict-prone South Asia.

To sum up, the inclusion of disruptive technologies in states' inventories and evolving force postures have trapped India and Pakistan in unresolvable arms racing problems. For example, India's ambitions of inclusion of cutting-edge, disruptive technologies in its inventories and deployment of new surveillance means continue to create a new pattern of bilateral engagement, renewed arms racing problem and complexities for crisis and deterrence stability between the two rivals.

Mechanisms for crisis and deterrence stability

To avoid the eruption of a future crisis, the two states need to work together to create a better security environment where mechanisms to regulate advanced nuclear technologies and the negative application of non-nuclear/disruptive technologies be instituted. For this, initially, there is a need to establish a *crisis stability mechanism* leading to building a *deterrence stability* framework on the lines suggested below:

Crisis stability mechanism

A renewed political commitment is needed to normalize political relations by initiating a multipronged dialogue process: One, to achieve crisis stability, initially, the two states should adopt flexibility to resume the existing political CBMs. India and Pakistan, for the sake of peace and prosperity, should go a step ahead to resume political-to-political communications channels to lessen the tense environment, that in turn, would pave the way for progress in improving relations. Within this, the political will to resume dialogue, change strategic mindsets, shun hate speeches and use favourable political phrases on both sides of the borders need to be embraced.

Two, the revival of the Lahore Declaration would rebuild trust between India and Pakistan. Through the Kartarpur initiative,[7] people-to-people and business-to-business contacts, trade, interfaith dialogue and religious and cultural tourism can be promoted, which in turn would impact the socio-economic growth of the two states. Moreover, this process will generate mutual economic dependence that, in return, can moderate patterns of routine political rhetoric like propaganda, hate speech, blame gaming, visa restrictions and proxy wars; Three, on preventing the eruption of future crises, there is a need to assert control over alleged cross-border terrorism. Under the Lahore Declaration, the revival of JATM involving the highest authorities of the countries will lead to preventing cross-border terrorism

that results in the loss of life and further mistrust. It will be a difficult process, but through consistent negotiations, the two states can reach out to a mechanism that focuses on irritants that would minimize the probability of future crises. This will put the two nuclear arch-rivals on a positive roll towards the resumption of CBMs on the resolution of disputes such as Kashmir; Four, on regional conflict management, both states can build trust through talks to work on demilitarizing the LoC and reducing the frequent ceasefire violations that are the source of constant discomfort for inhabitants on both sides of the divide. If this is successful, the two countries may endeavour to strike a compromise on the settlement of their bilateral disputes, such as Kashmir, keeping in mind the protection of the human rights of Kashmiris. India's abrogation of the autonomous status of Kashmir cannot terminate the conflict and will not yield lasting peace as the voices and participation of the eight million Kashmiri people are completely missing on the Indian decision. In this context, the involvement of the key stakeholders including the people of Kashmir, UNMOGIP and the U.S., as mediators is needed under the parameters of the UN for the resolution of the Kashmir dispute.

Deterrence stability mechanism

To achieve deterrence stability, India and Pakistan must hold a dialogue to regulate nuclear technologies and non-nuclear/disruptive technologies in segregated forms. It is important to understand that the two states have spent more time and investment on crafting offensive doctrines and war-fighting strategies instead of learning how to stabilize deterrence to avoid wars. The two states may reiterate their recognition of nuclear deterrence as a factor of stability in the region and develop an understanding that neither the use of force is feasible nor the concept of total victory is achievable. Refuting strategic adventurism and avoiding war-fighting strategies and offensive doctrines are essential considerations to promote nuclear restraint. The following arrangements will lead the two states to stabilize nuclear deterrence and minimize the probability of a crisis.

Regulating nuclear technologies

A strategic dialogue between Islamabad and New Delhi can facilitate discussions on shared threat perception to identify mutual threats and vulnerabilities and eventually observe restraint on the development and deployment of certain weapon systems to address shared risks. The two states should reduce reliance on nuclear weapon*s* through the NCBMs toolkit. The reopening of official military hotlines and resumption of all the suspended bilateral nuclear agreements (discussed in the preceding chapters) under the guiding framework of the Lahore Declaration should be immediately affected. New discussions should emerge that include effective implementation of

restraints on induction of destabilizing systems; non-deployment of nuclear-capable ballistic missile systems; limits on production of warheads and counting and opening up of fissile material stockpiles, non-testing of land, air and sea/sub-sea launched cruise missiles, the accidental firing of missiles, the alert status of missiles and targeting practices, hypersonic weapons, dual-capable HGVs and HCMs.

India and Pakistan's nuclear doctrines are kept deliberately ambiguous, which enhances the risks of miscalculation and can make deterrence unstable. Increasing transparency in nuclear doctrine, posture and modernization plans will improve the chances of reaching deterrence stability. A relatively doable and comprehensive transparency regime may involve the exchange of information on deployed and non-deployed strategic systems; designating conventional or nuclear roles to dual-usable delivery systems, and ensuring separation plans on military and civilian facilities. To this end, both countries may publish their nuclear doctrines and reduce ambiguity wherever possible. For instance, India should inform the world whether it embraces a policy of NFU or FU, a policy of flexible response or massive retaliation. Similarly, Pakistan has adopted a policy of FU due to its conventional inferiority, but it does not specify when and under what conditions it would employ low-yield weapons. It may be beneficial for both India and Pakistan to declare redlines to reduce the risks of accidental escalation during crises. Other transparency measures may involve the adopting and sharing of a list of targeting plans or even declaring the number of warheads in their arsenals.

Thus, India and Pakistan should take action for instituting *arms race stability mechanisms* to reduce the risk of accidental nuclear war. The absence of regional arms control arrangements[8] has curtailed space for arms restraint. This, in turn, has pushed regional states in South Asia towards the adoption of offensive war-fighting strategies and counterforce postures with increased arms racing problems. Discussions should emerge on institutionalizing nuclear restraint regime, which should further include: (a) effective implementation of restraints on induction and deployment of destabilizing systems such as BMDs; (b) restraint on the production of further MIRVs and low-yield weapons in the future; (c) agreements on non-deployment of nuclear-capable ballistic missile systems; (d) agreements on the non-deployment of weapon systems in outer space; (e) agreement on limits on production of warheads and counting and opening up of fissile material stockpiles; and (f) creation of new norms to govern and regulate disruptive technologies as discussed below.

Regulate non-nuclear/disruptive technologies

Global mechanism: The great powers such as U.S., China and Russia are rapidly integrating disruptive technologies into their military doctrines and capabilities. There is no formal instrument for arms control regulations

which determines a correlation between nuclear weapons and disruptive technologies or mitigates their military shocks/impacts. If regulatory mechanisms lag, states will exploit open space to pursue ambitious policies based on opportunities offered by these new technologies and their intersection with nuclear doctrines. There is a dire need that great powers to evaluate the potential impact of these technological trends and craft appropriate measures to mitigate the possible risks posed by AI-enabled technologies in the military domain.

Initially, there is a need to move towards a global broader conception for the reduction of risks emanating from disruptive technologies, which may initially not necessarily be focused on promoting treaties or formal/legally binding agreements but on the creation of norms. In the second stage, a separate formal mechanism can be created to oversight the military applications of disruptive technologies. In the third stage, a global legally binding arrangement can be instituted to control and ban the negative/offensive use of disruptive technologies in the military domain on the lines presented in Chapter 6 of this volume.

For example, the hypersonic weapons system should be included in the existing mechanisms such as the MTCR, which should continue to monitor and consider possible expansion of its controls on dual-use items to maintain a system of export controls that adequately targets HGVs and HCMs.[9] Further, bilateral frameworks such as the New START between the U.S. and Russia can also be used as a catalyst in this regard. For instance, the dual-capable HGVs used with the ballistic missile launchers or nuclear HCMs installed on the bombers could be managed under similar sorts of new frameworks. Possible restrictions or even a ban can be placed on ASAT weapons or a ban on attacking certain satellites, such as nuclear early warning, that are central to stability. Building on the draft proposal for an International Code of Conduct for Outer Space Activities should continue to pursue confidence building and elite-level education on the uses of outer space and the escalation potential of counter-space operations.[10] While there is no formal mechanism to overcome these cyber threats, therefore, the great powers and international institutions should play their part in cyber-nuclear risk reduction. For instance, these initiatives might encompass continued efforts made via the UN Open Ended Working Group[11] to create cyber norms and also intensive risk reduction negotiation between the nuclear-armed states. The international community might also use the CD forum to promote the idea of an agreement on non-hacking into nuclear command and control systems or issue joint declarations about the risks of the cyber-nuclear interface.[12] Civil society groups and other relevant institutions may also be taken in the loop to create awareness and generate pressure on the policy apparatus.

Regional mechanism: The nuclearized South Asia does not lag and is also on the road to acquiring disruptive technologies where India is heavily investing in AI-based technologies concerning its military application to

counter China while forcing Pakistan to maximize its capabilities vis-à-vis India. Pakistan is in favour of a pre-emptive ban on all types of AI-based weapon systems that will lead to undermine the deterrence stability in the region and push states to a new AI-led arms race in South Asia.

Thus, India and Pakistan should work on minimizing risks posed by non-nuclear/disruptive technologies. Although governing disruptive technologies is not an easy task, but the following steps need to be charted to avoid negative applications of AI-based disruptive technologies. There are a number of CBMs that should be initiated to understand each other's intentions and potential capabilities in AI domain: (a) initiate measures related to the use of AI in connection with nuclear weapons and deterrence; (b) show transparency on their policies, strategies and intensions regarding application of AI and share general information about ongoing and planned Research and Development activities and their potential capabilities in AI domain; (c) initiate risk-reduction measures; (d) show transparency by disclosing AI-related strategies, policies and military doctrines that outline how a state intends to use or not to use the AI-related technologies in a military context; (e) share information on how states implement human control over the use of AI in early warning systems and ensure each other that nuclear launch decisions are not fully automated; (f) actively communicate about non-threatening activities involving AI-systems that could be misinterpreted as threatening i.e., military exercises, operational tests and exploration of the seabed for peaceful purposes; (g) both the states should agree on non-development of a fully automated nuclear command-and-control system; (h) hold dialogue and the establishment of norms to regulate disruptive technologies; (i) initiate formal treaties or the implementation of restrictions on certain technologies, their future mechanisms of control, restraint and risk are important; and (j) build agreements on do's and don'ts and introduce control measures on their possession and use in military applications.

Thus, the great powers need to make efforts to resolve the PAROS treaty in the CD to halt the vicious arms race between India and Pakistan for ensuring strategic stability. India is in the initial stages of developing hypersonic technologies such as BrahMos-2 and HSTDV, whereas Pakistan is considered to have no such development programs. However, if the great powers conclude a treaty on the said issue, there is a possibility to avoid a probable hypersonic rivalry between India and Pakistan by making India party to it.[13] Both states should work towards bilateral limits and ban the deployment of hypersonic weapons in a future agreement. India and Pakistan should expand the scope of the 1988 agreement[14] on non-attack on each other's nuclear installations to include avoidance of cyber-attacks. Under this agreement such as the non-attack of each other's critical infrastructure through cyberspace, the two states can work together on the definition of critical infrastructure to include C2 systems and nuclear facilities in it. More so, a new regional mechanism for cyber agreement can be

achieved to restrain Cyber Targeting of Civilian Nuclear Installations and Critical Infrastructure, online propaganda and cyber theft of intellectual property. Further, within this agreement exchange of critical information, promotion of responsible state behaviour in cyberspace, cyber dialogue on cybercrimes; and establishment of CERTs can be achieved.

All these measures suggested in Chapter 6 will be instrumental to mitigate the nuclear risks and threats associated with the unregulated military use of emerging/disruptive technologies amidst ambitious doctrinal changes and induction of advanced nuclear weapons. The above incremental approaches may lead to creating crisis and deterrence stability in the South Asian region.

Notes

1 See Abdul Sattar, *Pakistan's Foreign Policy 1947–2005.*
2 See Saira Khan, 'Nuclear Weapons.'
3 See Cheema, 'The Kashmir Dispute.'
4 See 'Musharraf Solution to Kashmir.'
5 Land Warfare Doctrine-2018, p. 3.
6 Ibid. p. 3.
7 Tridivesh Singh Maini, 'The Kartarpur Corridor and India-Pakistan Economic Linkages.'
8 Khan, 'Balancing and Stabilizing South Asia,' pp. 589–614.
9 Brockmann and Stefanovich, *Hypersonic Boost-Glide Systems and Hypersonic Cruise Missiles.*
10 Futter, 'Explaining the Nuclear Challenges Posed by Emerging and Disruptive Technology: A Primer for European Policymakers and Professionals,' p. 14.
11 See United Nations Office for Disarmament Affairs, 'Information and Telecommunications in the Context of International Security,' https://www.un.org/disarmament/ict-security/.
12 Futter, 'Emerging and Disruptive Technology,' p. 13.
13 See Ali, 'Hypersonic Weapons.'
14 See 'Non-Attack Agreement,' *Nuclear Threat Initiative.*

Bibliography

Abbas, Syed Sammer. 'Army Rubbishes Indian "Surgical Strikes" Claim as Two Pakistani Soldiers Killed at LoC.' *DAWN*, September 29, 2016, https://www.dawn.com/news/1286881.

Abbas, Syed Sammer. 'Pakistan Rejects India's Allegations of Involvement in a Terrorist Attack in Held Kashmir.' *DAWN,* September 18, 2016, https://www.dawn.com/news/1284555.

Abbasi, Rizwana. 'A Strategic Shift in Indo-Pak Nuclear Strategy: Implications for Regional Stability.' *Islamabad Policy Research Institute Journal* XV, no. 2 (2015): pp. 1–27.

Abbasi, Rizwana. 'Addressing Nuclear Non-Proliferation and Disarmament Challenges in South Asia.' *E-International Relations* (2018). https://www.e-ir.info/2018/01/06/addressing-nuclear-non-proliferation-and-disarmament-challenges-in-south-asia/.

Abbasi, Rizwana. *Building a Road to Nuclear Disarmament: Bridging the Gap between Competing Approaches*. London: Routledge, 2021.

Abbasi, Rizwana 'Evolving Security Dilemma between the US and China: Implications for Regional Strategic Stability on South Asia.' *Pakistan Horizon* 73, no. 1 (2020): pp. 55–77.

Abbasi, Rizwana and Sufian Ullah. 'Rising Strategic Instability and Declining Prospects for Nuclear Disarmament in South Asia – A Pakistani Perspective.' *Asian Journal of Peacebuilding* 10, no. 1 (2022): pp. 215–241. https://doi.org/10.18588/202202.00a207.

Abbasi, Rizwana and Zafar Khan. *Nuclear Deterrence in South Asia: New Technologies and Challenges to Sustainable Peace*. London: Routledge, 2019.

Abdul Nasir Jamal. 'Cyber Security Challenges and Response.' The Express Tribune, November 6, 2021, https://tribune.com.pk/story/2328017/cyber-security-challenges-and-response.

Abdullah, Sannia. 'Cold Start in Strategic Calculus.' *Islamabad Policy Research Institute Journal* XII, no. 1 (2012): pp. 1–27.

Abdullah, Sannia. 'Pakistan's Full-Spectrum Deterrence: Trends and Trajectories.' *South Asian Voices,* December 13, 2018, https://southasianvoices.org/pakistan-full-spectrum-deterrence-trends-trajectories/.

Abrar, Mian. 'JIT Report Pokes Holes in India's Pathankot Theories.' *Pakistan Today,* April 4, 2016, https://archive.pakistantoday.com.pk/2016/04/04/jit-report-pokes-holes-in-indias-pathankot-theories/.

Acton, James M. 'Hypersonic Boost-Glide Weapons.' *Science & Global Security* 23, no. 3 (2015): pp. 191–219. https://doi.org/10.1080/08929882.2015.1087242.

Afridi, Manzoor Khan and Abdul Zahoor Khan. 'Pak-China Boundary Agreement: Factors and Indian Reactions.' *International Journal of Social Science Studies* 4, no. 2 (2016), pp. 1–5. https://doi.org/10.11114/ijsss.v4i2.1296.

Ahmed, Amin. 'India Has World's Third Biggest Defence Spending Now.' *DAWN,* April 28, 2020, https://www.dawn.com/news/1552802.

Ahmed, Firdaus. 'The Day after Cold Start.' *Institute of Peace and Conflict Studies*, Military Article no. 2424 (2007). http://www.ipcs.org/article/military/the-day-after-cold-start-2424.html.

Ahmed, Mansoor. 'Nuclear Exceptionalism: Fissile Materials, Fuel Cycles, and Safeguards.' Belfer Center for Science and International Affairs, 2017. https://www.belfercenter.org/sites/default/files/files/publication/India%27s%20Nuclear%20Exceptionalism.pdf.

Ahmed, Mansoor. 'Pakistan's Tactical Nuclear Weapons and Their Impact on Stability.' Carnegie Endowment for International Peace, June 30, 2016, https://carnegieendowment.org/2016/06/30/pakistan-s-tactical-nuclear-weapons-and-their-impact-on-stability-pub-63911.

Ahmed, Mansoor and Maimuna Ashraf. 'The Pulwama-Balakot Crisis: A Strategic Assessment.' *Centre for International Strategic Studies Islamabad* VII, no. 1 (2020): pp. 1–24.

Akhtar, Kamran. 'Additional Secretary of Arms Control and Disarmament.' Ministry of Foreign Affairs, *Pakistan*. Interview by one of the Authors, Islamabad, 2022.

Akhtar, Aqeel and Sufian Ullah. India's Sea-Based Nuclear Forces and Strategic Stability in South Asia.' *Australian Journal of Maritime & Ocean Affairs* (2021): pp. 1–15. https://doi.org/10.1080/18366503.2021.1961352.

Ali, Iftikhar and Jatswan S. Sidhu. 'India's Doctrinal Modifications Counterforce Temptations in South Asia.' *Journal of Asian and African* 57, no. 3 (2022): pp. 424–445. https://doi.org/10.1177/00219096211019075.

Ali, Major Muhammad Zeeshan. *Strategic Delusions – The Cold Start Doctrine: Proactive Strategy*. Kansas: School of Advanced Military Studies United States Army Command and General Staff College Fort Leavenworth, 2016.

Ali, Samran. 'Hypersonic Weapons Affects South Asia Too.' Arms Control Association, July/August 2019, https://www.armscontrol.org/act/2019-07/features/hypersonic-weapons-affect-south-asia-too.

Ali, Samran. 'India's Growing Counterforce Capabilities.' *STRAFASIA,* June 8, 2019, https://strafasia.com/indias-growing-counterforce-capabilities/.

Ali, Shafqat. 'Evidence Not Enough, Pakistan Tells India.' The Nation, January 12, 2016. https://www.nation.com.pk/12-Jan-2016/evidence-not-enough-pakistan-tells-india.

Ambassador (Retd.) Akram, Zamir. *Advisor to the Strategic Plans Division*. Pakistan. Interview by one of the Authors, Islamabad, 2022.

Amin, Tahir. 'Kargil Crisis in Kashmir.' *Cambridge Review of International Affairs* 13, no. 2 (2007): pp. 320–327.

Arif, Shaza. 'Military Applications of Artificial Intelligence: Impact on Warfare.' *Journal of Aerospace & Security Studies* 01 (2022): pp. 1–20.

Arms Control Association. (n.a.) 'India's Draft Nuclear Doctrine.' https://www.armscontrol.org/act/1999-07/indias-draft-nuclear-doctrine.

Art, Robert J. 'Between Assured Destruction and Nuclear Victory: The Case for the "Mad-Plus" Posture.' *Ethics* 95, no. 3 (1985): pp. 497–516. https://www.jstor.org/stable/2381034.

Ayoob, Muhammad. 'India in South Asia: The Quest for Regional Predominance.' *World's Policy Journal* 7, no. 1 (Winter 1989–1990): pp. 107–133.

Babar, Summar Iqbal, Masood Ur Rehman Khattak and Mujahid Hussain Sargana. 'Indo-Russian Strategic Partnership and Indian Military's Cold Start Doctrine.' *Policy Perspectives* 15, no. 2 (2018): pp. 71–83. https://www.jstor.org/stable/10.13169/polipers.15.2.0071.

Banerjee, Aritra. 'Pakistan "Races Ahead" of India in Drone Technology; Is 4th Country to Deploy UCAVs in Combat Ops.' The Eurasian Times, September 8, 2021, https://eurasiantimes.com/pakistan-races-ahead-of-india-in-drone-technology-is-4th-country-to-deploy-ucavs-in-combat-ops/.

Bano, Sher. 'Indian Militarization of Outer Space: Security Implications For Pakistan.' Modern Diplomacy, August 29, 2020, https://moderndiplomacy.eu/2020/08/29/indian-militarization-of-outer-space-security-implications-for-spakistan/.

Barno, David W. 'War in the Fourth Industrial Revolution.' *CSS,* July 16, 2018, https://isnblog.ethz.ch/uncategorized/war-in-the-fourth-industrial-revolution.

Basrur, Rajesh. 'India's Pakistan Problem: Operation Parakram Revisited.' *India Review* 18, no. 5 (2019): pp. 503–519. https://doi.org/10.1080/14736489.2019.1703362.

Basrur, Rajesh. *Minimum Deterrence and India's Nuclear Security*. Stanford, C.A.: Stanford University Press, 2006.

Basrur, Rajesh. 'Senior Fellow in the South Asia Program at the S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University, Singapore.' Email Interview by one of the Authors, 2022.

Basu, Nayanima. 'Open to Probe, but Will Retaliate if India Attacks: Pakistan PM Imran Khan on Pulwama.' *The Print*, February 19, 2019, https://theprint.in/diplomacy/open-to-probe-but-will-retaliate-if-india-attacks-pakistan-pm-imran-khan-on-pulwama/194982/.

BBC. 'Abhinandan: Who Is the Indian Pilot Captured by Pakistan?.' March 1, 2019, https://www.bbc.com/news/world-asia-india-47397409.

BBC. 'Balakot: Indian Air Strikes Target Militants in Pakistan.' February 26, 2019, https://www.bbc.com/news/world-asia-47366718.

BBC. 'World South Asia: India Loses Two Jets.' May 27, 1999, http://news.bbc.co.uk/2/hi/south_asia/354120.stm.

BBC News. 'Kashmir Attack: Pakistan Hits Back at India Accusations.' September 19, 2016, https://www.bbc.com/news/world-asia-37405719.

BBC News. 'Militants Attack Indian Army Base in Kashmir "Killing 17."' September 18, 2016, https://www.bbc.com/news/world-asia-india-37399969.

Beckley, Michael. 'The Emerging Military Balance in East Asia.' *International Security* 42, no. 2 (2017): pp. 78–119. https://doi.org/10.1162/ISEC_a_00294.

Bedi, Rahul. 'Indian Army Announces New Land Warfare Doctrine.' *Jane's Defense Weekly*, December 21, 2018.

Behera, Navina. *Demystifying Kashmir*. Washington, D.C.: Brooking Institute, 2006.

Bhardwaj, Ananya. 'India to Get New, "Robust" Cyber Security Policy Soon, Says PM Modi.' *The Print,* August 15, 2020, https://theprint.in/india/india-to-get-new-robust-cyber-security-policy-soon-says-pm-modi/482356/.

Bipindra, N. C. 'Rigid Rules Trip Modi's $250 Billion Plan to Modernise India's Defence.' *The Economic Times*, July 13, 2018, https://economictimes.indiatimes.com/news/defence/rigid-rules-trip-modis-250-billion-plan-to-modernise-indias-defence/articleshow/60370605.cms?from=mdr.

Biswas, Arka. 'Surgical Strikes and Deterrence Stability in South Asia.' *ORF Occasional Paper* no. 115 (June 2017): pp. 1–24.

Bordoloi, Pritam. 'How Does the Indian Army Want to Use AI?.' *Analytics India Magazine,* August 4, 2022, https://analyticsindiamag.com/how-does-the-indian-army-want-to-use-ai/#:~:text=So%20far%2C%20the%20Indian%20Army%20has%20used%20AI%20for%20facial,AI%20in%20its%20core%20operations.

Boulanin, Vincent et al. *Artificial Intelligence, Strategic Stability and Nuclear Risk*. Solna: SIPRI, 2020.

Bousquet, Antoine. *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity*. London: Hurst & Company, London, 2022.

Boyle, Michael J. 'The Race for Drones.' *Orbis* 59, no. 1 (2015): pp. 76–94 http://dx.doi.org/10.1016%2Fj.orbis.2014.11.007.

Bracken, Paul. 'The Second Nuclear Age.' *Foreign Affairs* 79, no. 1 (January–February 2000): pp. 146–156.

Breene, Keith 'Who Are the Cyberwar Superpowers?.' *World Economic Forum*, May 4, 2016, https://www.weforum.org/agenda/2016/05/who-are-the-cyberwar-superpowers/.

Brig. (Retd.) Hashmi, Javed Hassan SI (M). Served on Various Command and Staff Appointments in the Army. Email Interview by one of the Authors, Islamabad, 2022.

Brig. (Retd.) Salik, Naeem. Senior Research Fellow (Non-Resident), Center for International Strategic Studies. Interview by one of the Authors, Islamabad, 2022.

Brockmann, Kolja and Dmitry Stefanovich. *Hypersonic Boost-Glide Systems and Hypersonic Cruise Missiles Challenges for the Missile Technology Control Regime*. Stockholm: SIPRI, 2022.

Brodie, Bernard, ed. *Absolute Weapons: Atomic Power and World Order*. New York, N.Y.: Harcourt Brace, 1946.

Burbach, David T. 'Early Lessons from the Russia-Ukraine War as a Space Conflict.' *Atlantic Council,* August 30, 2022, https://www.atlanticcouncil.org/content-series/airpower-after-ukraine/early-lessons-from-the-russia-ukraine-war-as-a-space-conflict/.

Burgess, Stephen. 'The U.S. Pivot to Asia and Renewal of the U.S.–India Strategic Partnership.' *Comparative Strategy* 34, no. 4 (2015): pp 367–379. https://doi.org/10.1080/01495933.2015.1069517.

Business Standard. 'AI Adoption to Add $500 Billion to India's GDP by 2025: Nasscom Report.' June 23, 2022, https://www.business-standard.com/article/economy-policy/ai-adoption-to-add-500-billion-to-india-s-gdp-by-2025-nasscom-report-122062300493_1.html.

Business Standard. 'Major World Powers Ask India, Pakistan to Avoid Further Military Action.' February 27, 2019, https://www.business-standard.com/article/pti-stories/major-world-powers-ask-india-pak-to-exercise-utmost-restraint-119022701134_1.html.

Butt, Abdullah Rehman. 'Evolving Role of UAVs: A Case of Pakistan.' *Journal of Aerospace & Security Studies* 1 (2022): pp. 21–35.

Butt, Abdullah Rehman. 'Role of Space Capabilities in the Russia-Ukraine War.' *Centre for Aerospace and Security Studies*, April 28, 2022, https://casstt.com/post/role-of-space-capabilities-in-the-russia-ukraine-war/618.

Carnegie Endowment for Peace. Discussion on 'Plenary – Beyond the Nuclear Threshold: Causes and Consequences of First Use.' March 20, 2017, https://carnegieendowment.org/2017/03/20/plenary-beyond-nuclear-threshold-causes-and-consequences-of-first-use-pub-64779.

Carroll, Todd D. 'The Largest Tiger: India in the U.S. Policy toward Indo-Asia-Pacific.' In *Avoiding the Trap: U.S. Strategy and Policy for Competing in the Asia-Pacific Beyond the Rebalance*, edited by D. Lai, J. F. Troxell and F. J. Gellert, pp. 83–106. Washington, D.C.: U.S. Army War College Press, 2018.

Centre for Artificial Intelligence & Robotics (CAIR). (n.a.) 'Defence Research & Development Organization.' https://www.drdo.gov.in/labs-establishment/technologies/centre-artificial-intelligence-robotics-cair.

Chakma, Bhumitra. 'Pakistan's Nuclear Doctrine and Command and Control System: Dilemma of Small Nuclear Forces in Second Atomic Age.' *Security Challenges* 2, no. 2 (2006): pp. 115–133. https://www.jstor.org/stable/26459035.

Chansoria, Monika. 'Pakistan's Tactical Nukes Threaten Stability in South Asia.' *Foreign Policy,* May 5, 2014, https://foreignpolicy.com/2014/05/05/pakistans-tactical-nukes-threaten-stability-in-south-asia/.

Chari, P. R. 'India's Nuclear Doctrine: Stirrings of Change.' *Carnegie Endowment for International Peace* (June 4, 2014): https://carnegieendowment.org/2014/06/04/india-s-nuclear-doctrine-stirrings-of-change.

Chari, P. R. 'Nuclear Restraint, Risk Reduction, and the Security-Insecurity Paradox in South Asia.' In *Nuclear Risk Reduction in South Asia*, edited by Michael Krepon, pp. 15–36. New York, N.Y.: Palgrave Macmillan US, 2004.

Chaudhury, Rahul Roy. 'Nuclear Doctrine, Declaratory Policy, and Escalation Control.' *Stimson Center,* April 28, 2004, https://www.stimson.org/2004/nuclear-doctrine-declaratory-policy-and-escalation-control/.

Cheema, Pervaiz Iqbal. 'The Kashmir Dispute: Key to South Asian Peace.' *Islamabad Policy Research Institute Journal* XIV, no. 1 (2014): pp. 1–20.

Cheema, Zafar Iqbal. 'Cyber Space Security in South Asia on 28th January 2021.' *Strategic Vision Institute*, January 28, 2021, https://thesvi.org/svi-webinar-panel-discussion-report-on-cyber-space-security-in-south-asia/.

Cheema, Zafar Iqbal. *Indian Nuclear Deterrence: Its Evolution, Development, and Implications for South Asian Security*. Karachi: Oxford University Press, 2010.

Clary, Christopher. Assistant Professor of Political Science, University at Albany. Telephonic Interview by one of the Authors, 2022.

Clary, Christopher and Vipin Narang. 'Doctrine, Capabilities, and (In)Stability in South Asia.' In *Deterrence Stability*: *Escalation Control in South Asia*, edited by Michael Krepon and Julia Thompson, pp. 93–106. Washington, D.C.: Stimson, 2013.

Clary, Christopher and Vipin Narang. 'India's Counterforce Temptations: Strategic Dilemma, Doctrine, and Capabilities.' *International Security* 43, no. 3 (2019): pp. 07–52. https://doi.org/10.1162/isec_a_00340.

Clinton, Hillary. 'America's Pacific Century.' *Foreign Policy,* October 11, 2001, https://foreignpolicy.com/2011/10/11/americas-pacific-century/.

Clinton-Sharif Joint Statement on July 4, 1999. https://www.govinfo.gov/content/pkg/WCPD-1999-07-12/pdf/WCPD-1999-07-12-Pg1278.pdf.

Cohen, Stephen P. *India: Emerging Power*. Washington, D.C.: Brookings Institution Press, 2001.

Cohen, Stephen P. *Shooting for a Century: The India-Pakistan Conundrum*. Washington, D.C.: Brookings Institution Press, 2013.

Crawford, Timothy W. *Pivotal Deterrence, Third-Party Statecraft and the Pursuit of Peace*. London: Cornell University Press, 2003.

Crowley, Michael, Falih Hassan and Eric Schmitt. 'U.S. Strike in Iraq Kills Qassim Suleimani, Commander of Iranian Forces.' *The New York Times,* January 2, 2020, https://www.nytimes.com/2020/01/02/world/middleeast/qassem-soleimani-iraq-iran-attack.html.

Curtis, Lisa. 'The Triangular Dynamic in Asia: The US, India, and China.' *The Heritage Foundation*, April 26, 2007, https://www.heritage.org/asia/report/the-triangular-dynamic-asia-the-us-india-and-china.

Daily Times. 'Pakistan Tests Turkish-Made Bayraktar TB2 Drone in Latest Air Exercise.' September 29, 2022, https://en.dailypakistan.com.pk/29-Sep-2022/pakistan-tests-turkish-made-bayraktar-tb2-drone-in-latest-air-exercise.

Daily Times. 'Pathankot Aftermath.' January 6, 2016, https://dailytimes.com.pk/96208/pathankot-aftermath/.

Dalton, Toby and George Perkovich. *India's Nuclear Options and Escalation Dominance*. Washington, D.C.: Carnegie Endowment for International Peace, 2016. https://carnegieendowment.org/files/CP_273_India_Nuclear_Final.pdf.

Dalton, Toby and Tong Zhao. *At a Crossroads? China-India Nuclear Relations after the Border Clash*. Washington, D.C.: Carnegie Endowment for International Peace, 2020.

Davenport, Kelsey. 'India Tests Hypersonic Missile.' *Arms Control Association*, October 2020, https://www.armscontrol.org/act/2020-10/news/india-tests-hypersonic-missile.

Davies, Pascale. 'Cyberattacks Are Reshaping Modern Warfare. How Can Countries and Companies Protect Themselves? *Euronews,* August 8, 2022, https://www.euronews.com/next/2022/08/11/cyberattacks-are-reshaping-modern-warfare-how-can-countries-and-companies-protect-themselv.

DAWN. '2 Indian Aircraft Violating Pakistani Airspace Shot Down; Pilot Arrested.' February 27, 2019, https://www.dawn.com/news/1466347.

DAWN. 'India Claim to Have Struck "Biggest Training Camp of JeM in Balakot."' February 26, 2019, https://www.dawn.com/news/1466149.

DAWN 'India Spurns PM Khan's Olive Branch, Says Offer to Investigate Is "Lame Excuse."' February 19, 2019, https://www.dawn.com/news/1464803.

DAWN. 'Indian Defense Minister Blames Pakistan for Attack in India-Held Kashmir.' June 26, 2016, https://www.dawn.com/news/1267374.

DAWN. 'Pakistan Test Fires Nuclear-Capable Missile.' February 11, 2013, https://www.dawn.com/news/785266/pakistan-conducts-successful-test-of-.

DAWN. 'Revocation of Indus Waters Treaty Can Be Taken as an Act of War.' September 27, 2016, https://www.dawn.com/news/1286437.

DAWN. 'Timeline: How the Kulbhushan Jadhav Sada Unfolded.' July 17, 2019, https://www.dawn.com/news/1493236.

DAWN. 'Two Drones Intercepted over Base in Occupied Kashmir: Indian Military.' June 28, 2021, https://www.dawn.com/news/1631984.

De Silva, K. M. *Regional Powers and Small State Security: India and Sri Lanka 1977–90*. Washington, D.C.: The Woodrow Wilson Centre Press, 1995.

Defence Pakistan. 'Army, PAF Start Azm-e-Nau War Games.' July 14, 2009.

Dettmer, Jamei. 'Possible First Use of AI-Armed Drones Triggers Alarm Bells.' *VOA,* June 1, 2021, https://www.voanews.com/a/africa_possible-first-use-ai-armed-drones-triggers-alarm-bells/6206728.html.

Divakar, Amar. 'The Future of War and Deterrence in an Age of Autonomous Weapons.' *TRT World,* June 17, 2021, https://www.trtworld.com/magazine/the-future-of-war-and-deterrence-in-an-age-of-autonomous-weapons-47602.

Dixit, J. N. *India-Pakistan in War and Peace*. London: Routledge, 2000.

Dominguez, Gabriel. 'Pakistan Receives Five CH-4 UAVs from China.' *JANES,* January 27, 2021, https://www.janes.com/defence-news/news-detail/pakistan-receives-five-ch-4-uavs-from-china.

Dulat, Amarjit Singh, Asad Durrani and Aditya Sinha. *The Spy Chronicles: RAW, ISI and the Illusion of Peace*. New Delhi: Harper Collins, 2018.

Durrani, Asif. Pakistan's Former Ambassador. Interview by one of the Authors, Islamabad, 2022.

Einhorn, Robert and Waheguru Pal Singh Sidhu. *The Strategic Chain: Linking Pakistan, India, China, and the United States*. Washington, D.C.: Brooking Institution, 2017.

Erickson, Andrew S., Walter C., Ladwig, III and Justin Mikolay. 'Diego Garcia and the United States Emerging Indian Ocean Strategy.' *Asian Security* 6, no. 3 (September 2010): pp. 214–237. https://doi.org/10.1080/14799855.2010.507408.

Farley, Robert. 'Managing the Military Problem of Space: The Case of India.' *The Diplomat,* April 19, 2021, https://thediplomat.com/2021/04/managing-the-military-problem-of-space-the-case-of-india/.

Farnsworth, Timothy. 'U.S., Russia Discuss Cyber Hotline.' Arms Control Association, 2012, https://www.armscontrol.org/act/2012-05/us-russia-discuss-cyber-hotline.

Feaver, Peter D. 'Neooptimists and Proliferation's Enduring Problems.' *Security Studies* 6, no. 4 (1997): pp. 93–125.

Feaver, Peter D. 'Optimists, Pessimists, and Theories of Nuclear Proliferation Management.' *Security Studies* 4, no. 4 (2008): pp. 754–72. https://doi.org/10.1080/09636419509347602.

Feaver, Peter D. 'Proliferation Optimism and Theories of Nuclear Operations.' *Security Studies* 2, no. 3–4 (2010): pp. 159–191. https://doi.org/10.1080/09636419309347523.

Feldstein, Steven. 'The Global Expansion of AI Surveillance.' *Carnegie Endowment for International Peace*, September 17, 2019, https://carnegieendowment.org/2019/09/17/global-expansion-of-ai-surveillance-pub-79847.

Feng, Liu and Zhang Ruizhuan. 'The Typologies of Realism.' *Chinese Journal of International Politics* 1 (2006): pp. 109–134.

Financial Times. 'India's Narendra Modi Lashes Out Over Delayed Fighter Jet Deal.' March 3, 2019, https://www.ft.com/content/58825ac8-3d93-11e9-8c2f-30761f19a974.

Fitzpatrick, Mark. 'Terrorism isn't Pakistan's Gravest Nuclear Danger.' *Express Tribune,* May 7, 2014, https://tribune.com.pk/story/704927/terrorism-isnt-pakistans-gravest-nuclear-danger.

Forden, Geoffrey. 'Reducing a Common Danger.' Policy Analysis Paper no. 399 (2001): pp. 2–20. https://www.cato.org/policy-analysis/reducing-common-danger-improving-russias-early-warning-system.

Freedman, Lawrence. *Deterrence*. Cambridge: Polity Press, 2004.

Freedman, Lawrence and Srinath Raghavan. 'Coercion.' In *Security Studies: An Introduction*, edited by Paul D. Williams, pp. 191–205. New York, N.Y.: Routledge, 2018.

French, Howard W. 'Pakistan Vows Its "Full Might" If a War Comes.' *The New York Times,* May 28, 2002, https://www.nytimes.com/2002/05/28/world/pakistan-vows-its-full-might-if-a-war-comes.html.

Fruhlinger, Josh. 'Stuxnet Explained: The First Known Cyberweapon.' *CSO,* August 31, 2022, https://www.csoonline.com/article/3218104/stuxnet-explained-the-first-known-cyberweapon.html.

Futter, Andrew. 'Deterrence, Disruptive Technology and Disarmament in the Third Nuclear Age.' University of Leicester, 2022, https://hiroshimaforpeace.com/wp-content/uploads/2022/04/Deterrence-Disruptive-Technology-and-Disarmament-in-the-Third-Nuclear-Age.pdf.

Futter, Andrew. 'Explaining the Nuclear Challenges Posed by Emerging and Disruptive Technology: A Primer for European Policymakers and Professionals.' Non-Proliferation and Disarmament Papers no. 73 (2021): pp. 1–16.

Futter, Andrew. Professor in International Politics, University of Leicester. Email Interview by one of the Authors, 2022.

Futter, Andrew and Benjamin Zala. 'Strategic Non-Nuclear Weapons and the Onset of a Third Nuclear Age.' *European Journal of International Security* 6, no. 3 (2021): pp. 257–277, https://doi.org/10.1017/eis.2021.2.

Gady, Franz-Stephen. 'China, Pakistan to Co-Produce 48 Strike-Capable Wing Loong II Drones.' The Diplomat, October 9, 2018, https://thediplomat.com/2018/10/china-pakistan-to-co-produce-48-strike-capable-wing-loong-ii-drones/.

Ganguly, Rajat. 'India's Military: Evolution, Modernisation and Transformation.' *India Quarterly* 71, no. 3 (2015): pp. 187–205. https://doi.org/10.1177/0974928415584021.

Ganguly, Sumit. 'Nuclear Stability in South Asia.' *International Security* 33, no. 2 (2008): pp. 45–70. https://www.jstor.org/stable/40207131.

Ganguly, Sumit. 'Wars without Conflict: Indo-Pakistani Conflict.' *Annals of the American Academy of Political and Social Science* 541, no. 1 (1995): pp. 167–178. https://doi.org/10.1177/0002716295541001012.

Ganguly, Sumit and Kapur S. Paul, eds. *Nuclear Proliferation in South Asia: Crisis Behavior and the Bomb*. New York, N.Y.: Routledge, 2009.

Geist, Edward and Andrew J. Lohn. *How Might Artificial Intelligence Affect the Risk of Nuclear War*. Santa Monica, C.A.: RAND Corporation, 2018.

Ghami, Usman and Khalid Chandio. 'Indian Great Power Aspirations: An Analysis.' *Islamabad Policy Research Institute Journal* 13, no. 2 (2013): pp. 112–120.

Ghoshal, Devjyot. 'Modi Commissions India's First Home-Built Aircraft Carrier in Defence Push.' *Reuters*, September 2, 2022, https://www.reuters.com/world/india/modi-commissions-indias-first-home-built-aircraft-carrier-defence-push-2022-09-02/.

Gigova, Radina. 'Who Vladimir Putin Thinks Will Rule the World.' CNN News, September 2, 2017, https://edition.cnn.com/2017/09/01/world/putin-artificial-intelligence-will-rule-world/index.html.

Gill, John H. 'India and Pakistan: A Shift in the Military Calculus?.' In *Strategic Asia, 2005–06: Military Modernization in an Era of Uncertainty*, edited by J. Tellis Ashley and Wills Michael, pp. 237–268. Seattle, W.A.: National Bureau of Asian Research, 2005.

Gilpin, Robert. *War and Change in World Politics*. Cambridge: Cambridge University Press, 1981.

Goel, Sanjay. 'National Cyber Security Strategy and the Emergence of Strong Digital Borders.' *Connections: The Quarterly Journal* 19, no. 1 (2020): pp. 73–86. https://doi.org/10.11610/Connections.19.1.07.

Goswami, Dev. 'SPICE-2000: Know All About the Smart Bomb Indian Air Force Used for Balakot Airstrike.' India Today, March 5, 2019, https://www.indiatoday.in/fyi/story/spice-2000-indian-air-force-balakot-airstrike-mirage-jets-1470988-2019-03-05.

Goulter, Christina and Harsh V. Pant. 'Realignment and Indian Airpower Doctrine.' Air University, January 2, 2020, https://www.airuniversity.af.edu/Wild-Blue-Yonder/Articles/ArticleDisplay/Article/2007488/realignment-and-indian-airpower-doctrine/.

Government of India: Ministry of External Affairs Press Release. March 08, 2006, https://www.mea.gov.in/pressreleases.htm?dtl/4883/goi+conveys+to+pakistan+its+protest+against+proposed+construction+of+bhasha+dam+and+appreciation+for+humanitarian+gesture+shown+by+a+pakistani+ship+to+an+indian+ship.

Gray, Colin S. *The Second Nuclear Age*. London: Lynne Rienner, 1999.

Greenemeier, Larry. 'GPS and the World's First "Space War".' Scientific American, February 8, 2016, https://www.scientificamerican.com/article/gps-and-the-world-s-first-space-war/.

Gulf News. 'Violation of Water Treaty Risks War, Senior Pakistan Official Warns.' September 27, 2016, https://gulfnews.com/world/asia/pakistan/violation-of-water-treaty-risks-war-senior-pakistan-official-warns-1.1903026.

Gupta, Shishir. 'Caught between Pakistan's Claim on Kashmir and China's OBOR, India must Stand on Its Own.' *Hindustan Times,* May 20, 2017, https://www.hindustantimes.com/opinion/caught-between-pakistan-s-claim-on-kashmir-and-china-s-obor-india-must-stand-on-its-own/story-ZJ8Lq8Nq2bNd19seD7le9M.html.

Haenlein, Michael and Andreas Kaplan. 'A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence.' *California Management Review* 61, no. 4 (2019): pp. 5–14. https://doi.org/10.1177/0008125619864925.

Hagerty, Devin T. 'India's Regional Security Doctrine.' *Asian Survey* 31, no. 4 (1991): pp. 351–363. https://doi.org/10.2307/2645389.

Hagerty, Devin T. 'Nuclear Deterrence in South Asia: The 1990 Indo-Pakistani Crisis.' *International Security* 20, no. 3 (1995–1996): pp. 79–114. https://doi.org/10.2307/2539140.

Haider, Irfan. 'Nawaz-Modi Call: India Urges Pakistan to Act after Pathankot Airbase Attack.' *DAWN,* January 5, 2016, https://www.dawn.com/news/1230945.

Haider, Suhasini. 'Claiming the four-step formula.' *The Hindu*, May 15, 2014, https://www.thehindu.com/opinion/lead/Claiming-the-four-step-formula/article11634935.ece.

Haider, Zeeshan. 'Pakistan Cautions India against "Non-state Actors".' *Reuters*, December 27, 2008, https://www.reuters.com/article/uk-india-pakistan-idUKTRE4BQ0P320081227.

Hali, S. M. 'PAFs Exercise High Mark 2010.' *The Nation,* March 17, 2010.

Hashmi, Faraz. 'Nuclear Deterrence Vital to Security.' *DAWN,* June 26, 2001.

Hersh, Seymour M. *The Price of Power Kissinger in the Nixon White House*. New York, N.Y.: Summit Books, 1983.

Herz, John. 'Idealist Internationalism and the Security Dilemma.' *World Politics* 2, no. 2 (1950): pp. 157–180.

Hibbs, Mark. 'Eyes on the Prize: India's Pursuit of Membership in the Nuclear Suppliers Group.' *The Non-Proliferation Review* 24, no. 3–4 (2017): pp. 275–296. https://doi.org/10.1080/10736700.2018.1436253.

Hindustan Times. 'Diplomatic Disaster: Modi Govt under Fire over Pak Report on Pathankot.' April 6, 2016, https://www.hindustantimes.com/india/modi-govt-under-fire-after-pak-media-claims-pathankot-attack-was-staged/story-IzUQdnhV5VdBoOAicJzIuI.html.

Hindustan Times. 'India Propagating a "Hostile Narrative" about Uri Attack: Pak Army Chief.' September 19, 2016, https://www.hindustantimes.com/world-news/india-propagating-hostile-narrative-about-uri-attack-pak-army-chief/story-LFHNi2z8BFDPow4xtjMGSM.html.

Hindustan Times. 'Revocation of Indus Treaty Can Be Taken as 'Act of War: Pakistan's Sartaj Aziz.' September 21, 2016, https://www.hindustantimes.com/india-news/pakistan-can-go-to-international-court-of-justice-if-india-violates-indus-waters-treaty-sartaj-aziz/story-YErh1MnpM8qWZv2oiHa8EM.html.

History Pak.Com. (n.a.) 'Musharraf Solution to Kashmir Issue.' https://historypak.com/musharraf-solution-kashmir-issue/.

Hussain, Aijaz. 'Drone Attacks on Indian Air Force Base in Jammu Underscore New Threat.' *The Diplomat,* June 28, 2021, https://thediplomat.com/2021/06/drone-attacks-on-indian-air-force-base-in-jammu-underscore-new-threat/.

Hussain, Mian Zahid and Raja Qaiser Ahmed. 'Space Programs of India and Pakistan: Military and Strategic Installations in Outer Space and Precarious South Asian Regional Strategic Stability.' *Space Policy* 47 (2019): pp. 63–75. https://doi.org/10.1016/j.spacepol.2018.06.003.

India Brand Equity Foundation. Latest updated on August 2022, https://www.ibef.org/industry/information-technology-india.

Indian Army. Land Warfare Doctrine 2018. Government of India, December 2018.

Inter Services Public Relations. 'Pakistan Successfully Conducted Training Launch of Short Range Surface to Surface Ballistic Missile "Nasr" to Enhance the Operational Efficiency of Army Strategic Forces Command Besides Re-Validating the Desired Technical Parameters.' No PR-32/2019-ISPR, January 24, 2019. https://www.ispr.gov.pk/press-release-detail.php?id=5173/.

Inter-Services Public Relations, Pakistan Press Release No PR-133/2013-ISPR, September 5, 2013, https://www.ispr.gov.pk/press-release-detail.php?id=2361.

Inter-Services Public Relations, Press Release No. PR-235/2010-ISPR, June 17, 2010, https://ispr.gov.pk/press-release-detail.php?id=1333.

Inter-Services Public Relations, Press Release No. PR94/2011-ISPR. April 19, 2011, https://www.ispr.gov.pk/press-release-detail.php?id=1721.

Inter-Services Public Relations, Press Release No. PR34/2012-ISPR. March 5, 2012, https://ispr.gov.pk/press-release-detail.php?id=1979.

Iqbal, Imran. 'India's New-Normal.' *The News*, March 7, 2019. https://www.thenews.com.pk/print/442019-india-s-new-normal.

Islamabad Policy Research Institute Press Release. 'Indian Armed Forces Joint Doctrine 2017: A Critical Appraisal.' February 28, 2018.

Jalil, Ghazala Yasmin. 'Implications of Emerging Hypersonic Missile Race.' *Hilal Magazine,* December 3, 2020, https://www.hilal.gov.pk/eng-article/detail/NDcwOQ==.html.

Jarvis, Robert. 'Cooperation Under the Security Dilemma.' *World Politics* 30, no. 2 (1978): pp.167–214, https://doi.org/10.2307/2009958.

Jaspal, Zafar Nawaz. *India's 'Surgical Strike' Stratagem Brinkmanship and Response*. Islamabad: Khursheed Printers, 2019.

Jaspal, Zafar Nawaz. 'Indo-U.S. Nuclear Deal: Altering Global Nuclear Order.' *Institute of Strategic Studies, Islamabad* 28, no. 2/3 (2008): pp. 18–38. https://www.jstor.org/stable/45242436.

Jaspal, Zafar Nawaz. 'Tactical Nuclear Weapons and Strategic Stability in South Asia.' *Weekly Pulse,* September, 2011. http://www.weeklypulse.org/details.aspx?contentID=1252&storylist.

Jervis, Robert. *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon*. Ithaca, N.Y.; London: Cornell University Press, 1989.

Jervis, Robert. 'Why Nuclear Superiority Doesn't Matter.' *Political Science Quarterly* 94, no. 4 (1979): pp. 617–633. https://doi.org/10.2307/2149629.

Johnson, James. 'Artificial Intelligence: A Threat to Strategic Stability.' *Strategic Studies Quarterly* 14, no. 1 (2020): pp. 16–39. https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-14_Issue-1/Johnson.pdf.

Joint Doctrine Indian Armed Forces-2017. New Delhi: Directorate of Doctrine, Headquarters Integrated Defense Staff, 2017.

Jones, Rodney W. 'Nuclear Stability and Escalation Control in South Asia: Structural Factors.' In *Escalation Control and the Nuclear Option in South Asia*, edited by Michael Krepon, Rodney W. Jones and Ziad Haider, pp. 25–55. Stanford, C.A.: Stanford University Press, 2004.

Joshi, Shashank. 'An Evolving India Nuclear Doctrine.' In *Deterrence Instability and Nuclear Weapons in South Asia*, edited by Michael Krepon, Joshua T. White, Julia Thomson and Shane Mason, pp. 69–93. Washington, D.C.: Stimson Center, 2015.

Joshi, Yogesh and Frank O'Donnell. *India and Nuclear Asia: Forces, Doctrine, and Danger*. Washington, D.C.: Georgetown University Press, 2018.

Joshi, Yogesh Frank O' Donnell and Harsh V. Pant. *India's Evolving Nuclear Force and Its Implications for U.S. Strategy in the Asia-Pacific*. Carlisle Barracks, P.A.: Strategic Studies Institute and US Army War College, 2016.

Kahn, Herman. *On Escalation*. New York, N.Y.: Praeger, 1965.

Kapila, Subhash. *India's New Cold Start War Doctrine* (note-4) Gurmeet Kanwal, Indian Army Vision 2010. New Delhi: Harper Collins, 2008.

Kapila, Subhash. 'Pakistan's Army Politico-Military Signals to India Through Azm-e-Nau.' *South Asian Analysis,* April 21, 2010.

Kapur, S. Paul. 'Ten Years of Instability in a Nuclear South Asia.' *International Security* 33, no. 2 (2008): pp. 71–94. https://www.jstor.org/stable/40207132. https://doi.org/10.1162/isec.2008.33.2.71.

Karim, Mohd. Aminul. 'Is Nuclear Deterrence Workable at the Brink Time in South Asia and Beyond.' *The Korean Journal of Defense Analysis* 26, no. 1 (2014): pp. 35–49.

Karl, David J. 'Proliferation Pessimism and Emerging Nuclear Powers.' *International Security* 21, no. 3 (1996–1997): pp. 87–119. https://muse.jhu.edu/article/447447.

Kaur, Raminder. 'Stealth-Spectacles: The Discursive Waves of the Nuclear Asian Seascape.' *Journal for Peace and Nuclear Disarmament* 4, no. 1 (2021): pp. 163–185. https://doi.org/10.1080/25751654.2020.1864184.

Kaur, Surangya. 'AI Race: China and US in the Lead, Where India does Stand?' *News Click*. February 12, 2018, https://www.newsclick.in/ai-race-china-and-us-lead-where-does-india-stand.

Kaura, Vinay. 'India's Pakistan Policy: From 2016 'Surgical Strike' to 2019 Balakot "Airstrike."' *The Round Table* 109, no. 3 (2020): pp. 277–287. https://doi.org/10.1080/00358533.2020.1760499.

Kaura, Vinay. 'India's Relations with China from the Doklam Crisis to the Galwan Tragedy.' *India Quarterly* 76, no. 4 (2020): pp. 501–518. https://doi.org/10.1177/0974928420961768.

Khalid, Asma. 'Confidence Building Measures between India-Pakistan: Hope for Bilateral Peace.' *Centre for Strategic and Contemporary Research*, May 14, 2021, https://cscr.pk/explore/themes/defense-security/confidence-building-measures-between-india-pakistan-hope-for-bilateral-peace/.

Khalil, Basma 'India's Quest to Dominate South Asian Cyberspace: Challenges for Pakistan.' *Strategic Vision Institute,* August 29, 2020, https://thesvi.org/indias-quest-to-dominate-south-asian-cyberspace-challenges-for-pakistan/.

Khan, A. Nawaz. 'India as a Space Super Power: A Threat to South Asian Strategic Stability.' *STRAFASIA,* March 31, 2019, https://strafasia.com/india-as-a-space-super-power-a-threat-to-south-asian-strategic-stability/.

Khan, Ahyousha. 'Artificial Intelligence in South Asia and Implications for Pakistan.' *Strategic Vision Institute*, https://thesvi.org/artificial-intelligence-in-south-asia-and-implications-for-pakistan/.

Khan, Feroz Hassan. 'Minimum Deterrence: Pakistan's Dilemma.' *RUSI Journal* 156, no. 5 (2011): pp. 45–51. https://doi.org/10.1080/03071847.2011.626274.

Khan, Iftikhar A. 'Army Plans Largest Exercise Since 98 Zarb-i-Momin.' *DAWN,* April 6, 2010, https://www.dawn.com/news/529108/army-plans-largest-exercise-since-ae98-zarb-i-momin.

Khan, Muhammad, Ahmed Khan and Syed Turab Hyder. 'Strategic Restraint Regime in South Asia.' *Margalla Papers* 22, no. 1 (2018): pp. 78–89.

Khan, Riaz Muhammad. 'Conflict Resolution and Crisis Management Challenges in Pakistan-India Relations.' In *Investigating Crises: South Asia's Lessons, Evolving Dynamics and Trajectories*, edited by Sameer Lalwani and Hannah Haegeland, pp. 75–95. Washington, D.C.: Stimson Centre, 2018.

Khan, Riaz. Former Foreign Secretary, Government of Pakistan. Interview by one of the Authors, Islamabad, 2019.

Khan, Saira. *Nuclear Weapons and Conflict Transformation: The Case of India-Pakistan*. London: Routledge, 2008.

Khan, Saira. 'Nuclear Weapons and the Prolongation of the India-Pakistan Rivalry.' In *The India-Pakistan Conflict: An Enduring Rivalry*, edited by T. V. Paul, pp. 156–177. Cambridge: Cambridge University Press, 2005.

Khan, Shahrukh. 'Technological Challenges in the Way of Nuclear Risks Reduction and Strategic Stability in South Asia.' *Science Diplomacy Perspectives* Inaugural Issue (2022): pp. 23–43.

Khan, Zafar. 'Acquisition of Emerging Technologies by India.' *The Express Tribune,* September 24, 2022, https://tribune.com.pk/story/2378202/acquisition-of-emerging-technologies-by-india.

Khan, Zafar. 'Balancing and Stabilizing South Asia: Challenges and Opportunities for Sustainable Peace and Stability.' *International Journal of Conflict Management* 30, no. 5 (2019): pp. 589–614. https://doi.org/10.1108/IJCMA-08-2018-0093.

Khan, Zafar. 'Cold Start Doctrine: The Conventional Challenge to South Asian Stability.' *Contemporary Security Policy* 33, no. 3 (2012): pp. 577–594. https://doi.org/10.1080/13523260.2012.727685.

Khan, Zafar. 'Conceptualizing India's Evolving Nuclear Strategy under the Essentials of Minimum Deterrence: Limitations and Challenges.' *Comparative Strategy* 39, no. 6 (2020): pp. 579–591. https://www.tandfonline.com/action/showCitFormats?doi=10.1080/01495933.2020.1826864.

Khan, Zafar. 'Crisis Management in Nuclear South Asia: A Pakistani Perspective.' In *Investigating Crises: South Asia's Lessons, Evolving Dynamics and Trajectories*, edited by Sameer Lalwani and Hannah Haegeland, pp. 143–162. Washington, D.C.: Stimson Center, 2018.

Khan, Zafar. *Pakistan's Nuclear Policy: A Minimum Credible Deterrence*. London: Routledge, 2015.

Khan, Zafar. Professor of International Relations, Balochistan University of Information Technology, Engineering, and Management Sciences (BUITEMS). Email Interview by one of the Authors, 2022.

Khan, Zulfqar and Rizwana Abbasi. 'Regional-Centric Deterrence: Reassessing Its Efficacy for South Asia.' *Korean Journal of Defence Analysis* 25, no. 4 (2013): pp. 489–501.

Khattak, Masood Ur-Rehman. 'Evolution of New Indian Military Strategy: Implications for Pakistan.' *Margalla Papers Issue-I* (2019): pp. 29–39. https://www.jstor.org/stable/48544286.

Khattak, Masood Ur Rehman. 'The Indian Army's Land Warfare Doctrine 2018: A Critical Analysis.' *Islamabad Policy Research Institute Journal* XX, no. 1 (2020): pp. 105–134.

Khawaja, Asma Shakir. *Shaking Hands with Clenched Fists: The Grand Trunk Road to Confidence Building Measures Between Pakistan and India*. Islamabad: National Defense University, 2018.

Kile, Shannon N. and Hans M. Kristensen. 'Indian Nuclear Forces.' In *SIPRI Yearbook 2017*, edited by Maciej Magiera, pp. 641–646. Oxford: Oxford University Press, 2017.

Koithara, Verghese. *Crafting Peace in Kashmir: Through A Realist Lens*. New York, N.Y.: SAGE Publications, 2004.

Krepon, Michael. 'Looking Back: The 1998 Indian and Pakistani Nuclear Tests.' *Arms Control Association* 38, no. 4 (2008): pp. 51–55. https://www.proquest.com/openview/b55a1efa86a2b8141df64b21584f8ce9/1?pq-origsite=gscholar&cbl=37049.

Krepon, Michael (ed.). *Nuclear Risk Reduction in South Asia*. New York, N.Y.: Palgrave Macmillan US, 2004.

Krepon, Michael. 'Pakistan's Nuclear Strategy and Deterrence Stability.' In *Deterrence Stability: Escalation Control in South Asia*, edited by Michael Krepon and Julia Thomson, pp. 41–64. Washington, D.C.: Stimson, 2013.

Krepon, Michael. 'The Counterforce Compulsion in South Asia.' *Stimson Centre,* April 27, 2017, https://www.stimson.org/2017/counterforce-compulsion-south-asia/.

Krepon, Michael. 'The Stability-Instability Paradox in South Asia.' *Stimson Centre,* January 1, 2005, https://www.stimson.org/2005/stability-instability-paradox-south-asia/.

Kristensen, Hans M. and Matt Korda. 'Indian Nuclear Forces, 2022.' *Bulletin of Atomic Scientists* 78, no. 4 (2022): pp. 224–236. https://doi.org/10.1080/00963402.2022.2087385.

Kristensen, Hans M. and Maat Korda. 'Pakistani Nuclear Weapons, 2021.' *Bulletin of the Atomic Scientists* 77, no. 5 (2021): pp. 265–278. https://doi.org/10.1080/00963402.2021.1964258.

Kugelman, Michael. 'Why the India-Pakistan War over Water Is So Dangerous.' *Foreign Policy,* September 30, 2016, https://foreignpolicy.com/2016/09/30/why-the-india-pakistan-war-over-water-is-so-dangerous-indus-waters-treaty/.

Kuma, Sumita. 'Trends in Indo-Pakistan Relations.' *Strategic Analysis* 24, no. 2 (2000): pp. 221–246. http://dx.doi.org/10.1080/09700160008455210.

Kumar, Anand. 'India-Maldives Relations: Is the Rough Patch over?' *Indian Foreign Affair Journal* 11, no. 2 (2016): pp. 153–167. https://www.jstor.org/stable/45341094.

Kumar, Rajesh. 'Revisiting the Kashmir Insurgency, Kargil, and the Twin Peak Crisis: Was the Stability/Instability Paradox at Play?' *The New England Journal of Political Science* 3, no. 1 (2008): pp. 49–97.

Kydd, Andrew. 'Arms Race and Arms Control: Modelling the Hawk Perspective.' *American Journal of Political Science* 44, no. 2 (2000): pp. 228–244. https://doi.org/10.2307/2669307.

Ladwig, Walter C. III. 'A Cold Start for Hot Waters? The Indian Army's New Limited War Doctrine.' *International Security* 32, no. 3 (2007/08): pp. 158–190. https://doi.org/10.1162/isec.2008.32.3.158.

Lal, Anil Kumar. 'Space Power Security Matrix for India: Part 1.' *The Times of India,* June 15, 2022, https://timesofindia.indiatimes.com/blogs/rakshakindia/space-power-security-matrix-for-india-part-1/.

Lalwani, Samer and Hannah Haegeland, eds. *Investigating Crises: South Asia's Lessons, Evolving Dynamics, and Trajectories*. Washington, D.C.: Stimson Centre, 2018.

Lamb, Alastair. *Kashmir: A Disputed Legacy 1846–1990*. Hertfordshire: Roxford Books, 1991.

Langner, Ralph. 'Stuxnet's Secret Twin.' *Foreign Policy,* November 19, 2013, https://foreignpolicy.com/2013/11/19/stuxnets-secret-twin/.

Lavoy, Peter R., Scott D. Sagan and James J. Wirtz, eds. *Planning the Unthinkable*. New York, N.Y.: Cornell University, 2000.

Lee, Kai-Fu. 'The Third Revolution in Warfare.' *Atlantic Council,* September 11, 2021, https://www.theatlantic.com/technology/archive/2021/09/i-weapons-are-third-revolution-warfare/620013/.

Lewis, Jeffrey. 'Night of Murder: On the Brink of Nuclear War in South Asia.' *Nuclear Threat Initiative,* November 6, 2019, https://www.nti.org/analysis/articles/night-murder-brink-nuclear-war-south-asia/.

Li, Jieruo. 'Artificial Intelligence Technology and China's Defense System.' *Journal of Indo-Pacific Affairs*, April 1, 2022, https://www.airuniversity.af.edu/JIPA/Display/Article/2980879/artificial-intelligence-technology-and-chinas-defense-system/.

Liaropoulos, Andrew. 'Exploring the Theory and Practice of the Security Dilemma.' *The International Spectator* 44, no. 1 (2009): pp. 202–204. https://doi.org/10.1080/03932720802693291.

Lieber, Kier A. and Daryl G. Press. *The Myth of Nuclear Revolution: Power and Politics in the Atomic Age*. Ithaca, N.Y.: Cornell University Press, 2020.

Lieber, Keir A. and Daryl G. Press. 'The New Era of Counterforce: Technological Change and the Future of Nuclear Deterrence.' *International Security* 41, no. 4 (2017): pp. 9–49. https://doi.org/10.1162/ISEC_a_00273.

Limaye, Satu. 'Integrating an Ally and Aligner in a Principled Security Network: The United State and the India-Japan Strategic Partnership.' In *India and Japan: Assessing the Strategic Partnership*, edited by Rajesh Basrur and S. N. Kutty, pp. 91–112. Singapore: Palgrave MacMillan, 2018.

Liptak, Kevin et al. 'US Kills Al Qaeda Leader Ayman Al-Zawahiri in Drone Strike in Afghanistan.' *CNN,* August 2, 2022, https://edition.cnn.com/2022/08/01/politics/joe-biden-counter-terrorism/index.html.

Lok Sabha Debates. 'Made a Statement on Bilateral Talks with the United States of America on 15 December 1998.' https://indiankanoon.org/doc/862641/?type=print.

Lt. Gen. (Retd.) Khan, Tariq. Retired Pakistan Army General Officer. Telephonic Interview by the Authors, 2022.

Lt. Gen. Lodhi, Naeem Khalid. Retired Pakistan Army General Officer and also served as a Defence Secretary. Telephonic Interview by one of the Authors. 2022.

Maggsi, Amjad Abbas. 'Lahore Declaration February, 1999 a Major Initiative for Peace in South Asia.' *Pakistan Vision* 14, no. 1 (2013): pp. 184–201.

Mahmood, Amjad and Adil Sultan. 'Impact of India's ISR Capabilities on South Asian Security Dynamics.' *Strategic Studies* 41, no. 4 (2021): pp. 17–39.

Maini, Tridivesh Singh. 'The Kartarpur Corridor and India-Pakistan Economic Linkages.' *The Diplomat,* November 16, 2019, https://thediplomat.com/2019/11/the-kartarpur-corridor-and-india-pakistan-economic-linkages/.

Malik, Iftikhar H. 'The Afghanistan Crisis and the Rediscovery of the Frontline State.' *Asian Survey* 42, no. 1 (2002): pp. 204–212. https://www.jstor.org/stable/10.1525/as.2002.42.1.204.

Manan, Abdul. 'Kerry Urges Pakistan, India to Continue Talks Despite Pathankot Attack.' *The Express Tribune,* January 9, 2016, https://tribune.com.pk/story/1024712/kerry-urges-pakistan-india-to-continue-talks-despite-pathankot-attack.

Mani, V.S. 'Kargil Conflict International Law Perspective.' *Himalayan and Central Asian Studies* 3, no. ¾ (1999): pp. 46–86.

Masood, Salman. 'Pakistan Arrests Jaish Militants over Attack on Indian Air Base.' *The New York Times,* January 13, 2016, https://www.nytimes.com/2016/01/14/world/asia/pakistan-india-pathankot-jaish-muhammad.html.

Mckercher, B. J. C. *Routledge Handbook of Diplomacy and Statecraft*. New York, N.Y.: Routledge, 2012.

Mearsheimer, John J. 'Back to the Future: Instability in Europe after the Cold War.' *International Security* 15, no. 1 (1990): pp. 5–56. https://doi.org/10.2307/2538981.

Mearsheimer, John J. 'China's Unpeaceful Rise.' *Current History* 105, no. 690 (April 2006): pp. 160–162. https://www.jstor.org/stable/45318719.

Mearsheimer, John J. *Conventional Deterrence*, *Cornell Studies in Security Affairs*. Ithaca, N.Y.: Cornell UP, 1983.

Mearsheimer, John J. 'Nuclear Weapons and Deterrence in Europe.' *International Security* 9, no. 3 (1984): pp. 19–46. https://doi.org/10.2307/2538586.

Mearsheimer, John J. 'The Case for a Ukrainian Nuclear Deterrent.' *Foreign Affairs* 72, no. 3 (1993): pp. 50–66. https://doi.org/10.2307/20045622.

Mearsheimer, John J. *The Tragedy of Great Power Politics*. New York, N.Y.: Norton, 2001.

Menon, Shivshankar. *Choices: Inside the Making of India's Foreign Policy*. Washington, D.C.: Brookings Institution Press, 2016.

Menon, Prakash. *The Strategy Trap: India and Pakistan under Nuclear Shadow*. New Delhi: Wisdom Tree, 2018.

Mesquita, Bruce Bueno De and William H. Riker 'An Assessment of the Merits of Selective Nuclear Proliferation.' *Journal of Conflict Resolution* 26, no. 2 (1982): pp. 283–306. https://www.jstor.org/stable/173903.

Michael, Krepon. 'The Counterforce Compulsion in South Asia.' *Arms Control Wonk,* April 12, 2017, https://www.armscontrolwonk.com/archive/1203018/the-counterforce-compulsion-in-south-asia/.

Miglani, Sanjeev and Drazen Jorgic. 'India, Pakistan Threatened to Unleash Missiles at Each Other: Sources.' *Reuters*, March 17, 2019, https://www.reuters.com/article/india-kashmir-crisis-page-idINKCN1QZ0F1.

Miller, James N. Jr. and Richard Fontaine. *A New Era in U.S.-Russian Strategic Stability How Changing Geopolitics and Emerging Technologies Are Reshaping Pathways to Crisis and Conflict*. Cambridge, M.A.: Belfer Center, Harvard Kennedy School; Washington, D.C.: Center for New American Security, 2017.

Ministry of External Affairs, Government of India. 'Draft Report of Nation Security Advisory Board on Indian Nuclear Doctrine.' September 1, 2018. https://mea.gov.in/infocusarticle.htm?18916/Draft+Report+of+National+Security+Advisory+Board+on+Indian+Nuclear+Doctrine.

Ministry of External Affairs, Government of India. 'Para 2.II The Cabinet Committee on Security Reviews operationalization of India's Nuclear Doctrine.' January 4, 2003, https://mea.gov.in/press-releases.htm?dtl/20131/The_Cabinet_Committee_on_Security_Reviews_perationalization_of_Indias_Nuclear_Doctrine+Report+of+National+Security+Advisory+Board+on+Indian+Nuclear+Doctrine.

Mishra, Abhinandan. 'Indian Army Gets Future-Ready with AI-Based Equipment.' *Sunday Guardian Live,* July 16, 2022, https://www.sundayguardianlive.com/news/indian-army-gets-future-ready-ai-based-equipment.

Morgan, Patrick. *Deterrence Now*. Cambridge: Cambridge University Press, 2003.

Mukherjee, Rohan. 'Chaos as Opportunity: The United States and World Order in India's Grand Strategy.' *Contemporary Politics* 26, no. 4 (2020): pp. 420–438. https://doi.org/10.1080/13569775.2020.1777040.

Nagal, Balraj. 'India's Nuclear Strategy to Deter: Massive Retaliation to Cause Unacceptable Damage.' *CLAWS Journal* Winter (2015): pp. 1–20.

Naiyer, Farooq. 'Cyber Security Outlook for Pakistan.' In *Pakistan Outlook 2020 Politics, Economy & Security*, edited by Syed Faran Rizvi. Islamabad: Islamabad Policy Institute, 2020.

Nakashima, Ellen 'US and Russia Discuss Hotline for Cyber Incidents.' *Atlantic Council*, April 26, 2012, https://www.atlanticcouncil.org/blogs/natosource/us-and-russia-discuss-hotline-for-cyber-incidents/.

Nakashima, Ellen and Joby Warrick. 'Stuxnet Was Work of U.S. and Israeli Experts, Officials Say.' *The Washington Post,* June 2, 2012, https://www.washingtonpost.com/world/national-security/stuxnet-was-work-of-us-and-israeli-experts-officials-say/2012/06/01/gJQAlnEy6U_story.html.

Naqvi, Jawed. 'India Soften Tone after Powell's Visit: Jaswant Want Action on Terrorists' List.' *DAWN,* January 19, 2002, https://www.dawn.com/news/15713/india-softens-tone-after-powell-s-visit-jaswant-wants-action-on-terrorists-list.

Narang, Vipin. 'Posturing for Peace: Pakistan's Nuclear Posture and South Asian Stability,' *International Security* 34, no. 3 (2009/10): pp. 38–78. https://doi.org/10.1162/isec.2010.34.3.38.

Narang, Vipin. 'Five Myths about India's Nuclear Posture.' *The Washington Quarterly* 36, no. 3 (2013): pp. 143–157. https://doi.org/10.1080/0163660X.2013.825555.

National Command Authority. 'Opening Remarks by the Prime Minister at the National Command Authority.' July 14, 2011.

National Defence College, Islamabad. *Remarks of the Prime Minister of Pakistan, Nawaz Sharif on Nuclear Policies and the CTBT*, National Defence College, Islamabad.' May 20, 1999.

Nayak, Polly and Michael Krepon. *The Unfinished Crisis: US Crisis Management after the 2008 Mumbai Attacks*. Washington, D.C.: Stimson Centre, 2012.

Nayak, Polly and Michael Krepon. 'US Crisis Management in South Asia's Twin Peaks Crisis.' In *US Crisis Management in South Asia's Twin Peak Crisis Report 57*, edited by Polly Nayak and Michael Krepon, pp. 13–46. Washington, D.C.: Stimson Center, 2006.

Naz, Sonia. 'India's Military Application of Artificial Intelligence: Implications for Pakistan.' The Centre for Security, Strategy and Policy Research (CSSPR), The University of Lahore (2021): pp. 1–4.

Nene, Vidi. 'China and Pakistan to Jointly Produce 48 Wing Loong II Drones.' *JANES,* October 11, 2018, https://dronebelow.com/2018/10/11/china-and-pakistan-to-jointly-produce-48-wing-loong-ii-drones/.

Noubel, Filip. 'Drone Warfare: Can Humanitarian Law Catch Up with the Technology?' *Global Voices,* March 30, 2022, https://globalvoices.org/2022/03/30/drone-warfare-can-international-humanitarian-law-catch-up-with-the-technology/.

Nuclear Threat Initiative. (n.a.) 'Addressing Cyber-Nuclear Security Threats.' https://www.nti.org/about/programs-projects/project/addressing-cyber-nuclear-security-threats/.

Nuclear Threat Initiative. (n.a.) 'Lahore Declaration.' https://www.nti.org/education-center/treaties-and-regimes/lahore-declaration/.

O'Donnell, Frank. 'Review Essay: Stabilizing Nuclear Southern Asia,' *Asian Security* 16, no. 1 (2019): pp.127–139. https://doi.org/10.1080/14799855.2019.1620207.

O'Donnell, Frank and Alexander K. Bollfrass. *The Strategic Postures of China and India: A Visual Guide*. Belfer Center for Science and International Affairs, 2020.

Ogden, Chris. *Indian Foreign Policy: Ambition and Transition*. Cambridge: Polity Press, 2014.

Ohsishi, Kin. 'Compellence and Coercive Diplomacy: Concepts and Characteristics.' Research Fellow, Global Security Division, Policy Studies Department, 2019.

Panda, Ankit. 'India's 2017 Joint Armed Forces Doctrine: First Takeaways.' *The Diplomat,* April 28, 2017, https://thediplomat.com/2017/04/indias-2017-joint-armed-forces-doctrine-first-takeaways/.

Panda, Ankit. 'Pakistan Conducts Test of Nuclear-Capable Nasr Missile.' *The Diplomat,* January 26, 2019, https://thediplomat.com/2019/01/pakistan-conducts-test-of-nuclear-capable-nasr-missile/.

Panda, Ankit. 'The Sukhoi-30 MKI: India's Two-Front War Ace?' *The Diplomat,* January 1, 2019, https://thediplomat.com/2014/01/the-sukhoi-30-mki-indias-two-front-war-ace/.

Pandit, Rajat. 'Eye on China and Pakistan, Army Set to Buy Armed-Drone Swarms.' *The Times of India,* September 29, 2022, https://timesofindia.indiatimes.com/india/eye-on-china-and-pakistan-army-set-to-buy-armed-drone-swarms/articleshow/94522387.cms.

Pant, Harsh V. and Julie M. Super. 'India's "Non-alignment" Conundrum: A Twentieth Century Policy in a Changing World.' *International Affairs* 91, no. 4 (2015): pp. 747–764. https://www.jstor.org/stable/24539202.

Pari, Dinaker. 'How Did an Indian Airforce Mi-17Helicopter get Shot Down by the IAF?.' *The Hindu,* June 2, 2019, https://www.thehindu.com/news/national/how-did-an-indian-air-force-mi-17-helicopter-get-shot-down-by-the-iaf/article27400844.ece.

Pasricha, Anjana. 'India Looks to Enhance Military Capabilities in Space.' *Voice of America,* June 27, 2021, https://www.voanews.com/a/south-central-asia_india-looks-enhance-military-capabilities-space/6207536.html.

Perkovich, George and Toby Dalton. 'Modi's Strategic Choice: How to Respond to Terrorism from Pakistan.' *The Washington Quarterly* 38, no. 1 (2015): pp. 23–45. https://doi.org/10.1080/0163660X.2015.1038172.

Peters, E. John et al. *War and Escalation in South Asia*. Santa Monica, C.A.: RAND Corporation, 2006.

Philip, Snehesh Alex. 'Never Mind Balakot, IAF Is Worse Off Than Pakistan Air Force on pilot Strength.' *The Print,* May 7, 2019, https://theprint.in/defence/never-mind-balakot-iaf-is-worse-off-than-pakistan-air-force-on-pilot-strength/231826/.

Philip, Snehesh Aliz. 'Army Orders over 100 Indo-Israeli Kamikaze Drones Amid Active LAC and Precarious LoC.' *The Print,* September 3, 2021, https://theprint.in/defence/army-orders-over-100-indo-israeli-kamikaze-drones-amid-active-lac-and-precarious-loc/727508/.

Plagemann, Johannes and Sandra Destradi. 'Populism and Foreign Policy: The Case of India.' *Foreign Policy Analysis* 15, no. 2 (2019): pp. 283–301. https://doi.org/10.1093/fpa/ory010.

Prime Minister's Office. 'Prime Minister Inaugurates RAISE 2020 – a Mega Virtual Summit on Artificial Intelligence.' October 5, 2020, https://pib.gov.in/PressReleasePage.aspx?PRID=1661859.

Ragavan, V. R. 'Limited War and Nuclear Escalation in South Asia.' *The Non-Proliferation Review* 8, no. 3 (2001): pp. 82–98. http://dx.doi.org/10.1080/10736700108436865.

Raghavan, Pundi Srinivasan. 'National Security Determinants of Foreign Policy.' In *India's Foreign Policy: Drivers and Trends*, edited by A. Gupta and A. Wadhwa, pp. 34–44. New Delhi: Sage Publications, 2020.

Raghuvanshi, Vivek. 'India Finalizes $3B Blueprint for UAV Fleets.' *Defense News,* March 20, 2016, https://www.defensenews.com/air/2016/03/20/india-finalizes-3b-blueprint-for-uav-fleets/.

Raghuvanshi, Vivek. 'Watch India Test Its New Homemade Hypersonic Vehicle.' *Defense News*, September 9, 2020, https://www.defensenews.com/global/asia-pacific/2020/09/09/india-tests-homemade-hypersonic-vehicle/.

Rajagopalan, Rajesh. 'India's Nuclear Doctrine Debate.' Carnegie Endowment for International Peace, June 30, 2016, https://carnegieendowment.org/2016/06/30/india-s-nuclear-doctrine-debate-pub-63950.

Rajagopalan, Rajesh. *The Second Strike: Argument About Nuclear War in South Asia*. New Delhi: Penguin Books India, 2005.

Rajain, Arpit. *Nuclear Deterrence in Southern Asia*, *China, India, and Pakistan*. New Delhi: SAGE Publications, 2005.

Rajendram, Danielle 'India's New Asia-Pacific Strategy: Modi Acts East.' *Lowy Institute,* December, 2014, https://www.lowyinstitute.org/sites/default/files/indias-new-asia-pacific-strategy-modi-acts-east.pdf.

Reuters Staff, 'Pakistan Rejects Links to Attack in Indian Controlled Kashmir.' February 15, 2019, https://www.reuters.com/article/india-kashmir-attacks-pakistan-idINKCN1Q32S4.

Rid, Saeed Ahmed. 'Is the India-Pakistan Conflict Intractable?' *E-International Relations,* March 1, 2016, https://www.e-ir.info/2016/03/01/is-the-india-pakistan-conflict-really-intractable/.

Riedel, Bruce. 'The Mumbai Massacre and Its Implication for America and South Asia.' *Journal of International Affairs* 63, no. 1 (2009): pp. 111–126. https://www.jstor.org/stable/24384175.

Saadia, Haleema. Academician and Former Assistant Director Arms Control and Disarmament Affairs Branch at Strategic Planning Division. Email Interview by one of the Authors, 2022.

Saalman, Lora. 'Chinas Artificial Intelligence: Enabled Offense Hypersonic Glide Vehicles and Neural Networks.' In *Artificial Intelligence*, *China, Russia, and the Global Order*, edited by Nicholas D. Wright, pp. 162–165. Maxwell Air Force Base Montgomery, A.L.: Air University Press, 2019.

Saeed, Aamir. 'Pakistan Asks WhatsApp for Details of Users Targeted by ISRAELI Spyware.' *Arab News,* December 20, 2019, https://www.arabnews.pk/node/1601846/pakistan.

Safdar, Aneeqa. 'The Emerging Threat of Indian Cyber Warfare Against Pakistan.' *Centre for Aerospace and Security Studies,* August 28, 2020, https://casstt.com/post/the-emerging-threat-of-indian-cyber-warfare-against-pakistan/246.

Sagan, Scott D. 'The Origins of Military Doctrine and Command and Control Systems.' In *Planning the Unthinkable*, edited by Peter R. Lavoy, Scott D. Sagan and James J. Wirtz, pp. 16–46. New York, N.Y.: Cornell University Press, 2000.

Sagan, Scott D. 'The Perils of Proliferation: Organization Theory, Deterrence Theory, and the Spread of Nuclear Weapons.' *International Security* 18, no. 4 (1994): pp. 66–107. https://doi.org/10.2307/2539178.

Sagan, Scott D. and Kenneth N. Waltz. 'Indian and Pakistani Nuclear Weapons: For Better or Worse.' In *The Spread of Nuclear Weapons: A Debate Renewed*, edited by Scott D. Sagan and Kenneth N. Waltz, pp. 88–124. New York, N.Y.: W. W Norton & Company, 2003.

Sagan, Scott D. and Kenneth N. Waltz. *The Spread of Nuclear Weapons: A Debate Renewed*. New York, N.Y.: W.W. Norton, 2002.

Salik, Naeem. 'Nuclear Signaling during the Pulwama – Balakot Crisis 2019.' In *Pulwama-Balakot Crisis and Operation Swift Retort 27 February 2020*, edited by Saima Sial, pp. 26–32. Islamabad: CISS, 2020.

Sasikumar, Karthika. 'India-Pakistan Crises under the Nuclear Shadow: The Role of Reassurance.' *Journal of Peace and Nuclear Disarmament* 2, no. 1 (2019): pp. 151–169. https://doi.org/10.1080/25751654.2019.1619229.

Sattar, Abdul. *Pakistan's Foreign Policy 1947–2005*. Karachi: Oxford University Press, 2006.

Sawhney, Pravin. 'New Land Warfare Doctrine Is Not a Credible Deterrent to China or Pakistan.' *The Wire,* December 28, 2018, https://thewire.in/security/new-land-war-doctrine-is-not-credible-deterrent-to-china-or-pakistan.

Saxena, V. K. 'Pak UAV Capability – Poised for a Revamp.' *Vivekananda International Foundation,* January 28, 2019, https://www.vifindia.org/article/2019/january/28/pak-uav-capability-poised-for-a-revamp.

Schelling, Thomas C. *Arms and Influence*. New Haven, C.T.: Yale University Press, 1966.

Schneider, Barry R. *Counterforce Targeting Capabilities and Challenges*. Maxwell Air Force Base Montgomery, A.L.: Air University, 2004.

Seligman, Lara. 'Did India Shoot Down a Pakistani Jet? US Count Say No.' *Foreign Policy*, April 4, 2019, https://foreignpolicy.com/2019/04/04/did-india-shoot-down-a-pakistani-jet-u-s-count-says-no/.

Seng, Jordan. 'Less Is More: Command and Control Advantages of Minor Nuclear States.' *Security Studies* 6, no. 4 (1997): pp. 50–92. https://doi.org/10.1080/09636419708429322.

Sengupta, Prasun K. 'Mountain Warfare: The Kargil Experience.' *Asian Defense Journal* 10 (1999): pp. 42–46.

Shahi, Agha, Zulfiqar Ali Khan and Abdul Sattar. 'Securing Nuclear Peace.' *News International,* October 5, 1990.

Sial, Saima Aman. 'Prologue.' In *Pulwama-Balakot Crisis & Operation Swift Retort 27 February 2020*, edited by Saima Aman Sial, pp. 1–3. Islamabad: CISS, 2020.

Siddiqui, Naveed. 'Pakistan Navy Foils an Attempt by Indian Submarine to Enter Pakistani Waters.' *DAWN,* March 5, 2019, https://www.dawn.com/news/1467778.

Sigdel, Anil. *India in the Era of China's Belt and Road Initiative: How Modi Responds to Xi*. London: Lexington Books, 2020.

Singh, Rahul. 'Army Receives Swarm Drones, Eyes Light Tanks to Check PLA.' *The Hindustan Times,* August 27, 2022, https://www.hindustantimes.com/india-news/army-receives-swarm-drones-eyes-light-tanks-to-check-pla-101661537524265.html.

Singh, Vijaita. 'Will Give Befitting Reply to Terror Attack: Rajnath.' *The Hindu,* January 2, 2016, https://www.thehindu.com/news/national/Pathankot-terror-attack-Will-give-befitting-reply-to-terror-attack-says-Union-Home-Minister-Rajnath-Singh/article60522844.ece.

Smith, Jeff M. 'Strategic Autonomy and U.S.-Indian Relations.' *War on the Rocks,* November 6, 2020, https://warontherocks.com/2020/11/strategic-autonomy-and-u-s-indian-relations/.

Snyder, Glenn Herald. *The Balance of Power and the Balance of Terror*. San Francisco, C.A.: Chandler, 1965.

Snyder, Jack. *Myths of Empire: Domestic Politics and International Ambition*. Ithaca, N.Y.: Cornell University Press, 1991.

Sood, Meenakshi. 'Pakistan's (Non-Nuclear) Plan to Counter "Cold Start."' *The Diplomats,* March 25, 2017, https://thediplomat.com/2017/03/pakistans-non-nuclear-plan-to-counter-cold-start/.

Sood, V. K. and Pravin Sawhney. *Operation Parakram: The War Unfinished*. New Delhi: SAGE, 2003.

Speier, Richard H., George Nacouzi, Carrie Lee and Richard M. Moore. *Hypersonic Missile Nonproliferation: Hindering the Spread of a New Class of Weapons*. Santa Monica, C.A.: RAND Corporation, 2017. https://www.rand.org/content/dam/rand/pubs/research_reports/RR2100/RR2137/RAND_RR2137.pdf.

Stefanovich, Dmitry. 'Nuclear Posture and Technology Trends in South Asia and Ways Ahead.' *National Security Journal* 3, no. 4 (2022): pp. 1–10. https://doi.org/10.36878/nsj20220301.11.

Stimson Center. 'Agreement between India and Pakistan on Pre-Notification of Flight Testing of Ballistic Missiles.' October 25, 2012, https://www.stimson.org/2012/agreement-between-india-and-pakistan-on-pre-notification-of-flight-tes/.

Stimson Center. 'Confidence-Building and Nuclear Risk-Reduction Measures in South Asia.' June 14, 2012, https://www.stimson.org/2012/confidence-building-and-nuclear-risk-reduction-measures-south-asia/.

Stone, Richard. 'National Pride Is at Stake. Russian, China and United States Race to Build Hypersonic Weapons.' *American Association for the Advancement of Science,* January 8, 2020, https://www.sciencemag.org/news/2020/01/national-pride-stake-russia-china-united-states-race-build-hypersonic-weapons.

Strategic Vision Institute. 'Drone Systems in South Asia: Current Trends and Implications.' https://thesvi.org/drone-systems-in-south-asia-current-trends-and-implications/.

Subramanian, Nirupama. 'McCain Warns Pakistan of Indian Air Strikes,' *The Hindu,* December 7, 2008, https://web.archive.org/web/20081207224014/http://www.hindu.com/2008/12/07/stories/2008120757500100.htm.

Sultan, Adil. 'India-Pakistan Crises and the Evolving Dyadic Deterrence Model.' *Islamabad Policy Research Institute Journal* XX, no. 1 (2020): pp. 21–43.

Syed, Baqir Sajjad. 'Probe into Cyberattack by Indian Spy Network Launched.' *DAWN,* August 13, 2020, https://www.dawn.com/news/1574108.

Tauhidi, Amna. 'Cyber Element in the Russia-Ukraine War & Its Global Implications.' *Modern Diplomacy,* August 28, 2022, https://moderndiplomacy.eu/2022/08/28/cyber-element-in-the-russia-ukraine-war-its-global-implications/.

Tehseen, Muhammad. 'Sino-US Competition: Implication for South Asia and the Asia Pacific.' *Institute of Strategic Studies Islamabad* 37, no. 4 (2017): pp. 1–17. https://www.jstor.org/stable/48537569.

Tellis, Asley J. *India's, Emerging Nuclear Posture: Between Recessed Deterrence and Ready Arsenals*. Santa Monica, C.A.; RAND Corporation, 2001.

Tellis, Ashley J. 'India's ASAT Test: An Incomplete Success.' *Carnegie Endowment for International Peace,* April 15, 2019, https://carnegieendowment.org/2019/04/15/india-s-asat-test-incomplete-success-pub-78884.

Tellis, Ashley J., C. Christine Fair and Jamison Jo Medby. *Limited Conflicts under the Nuclear Umbrella: Indian and Pakistani Lessons from the Kargil Crisis*. Santa Monica, C.A.: RAND Corporation, 2001.

The Acronym Institute. 'Statement by Ambassador Munir Akram in the Plenary Meeting of the Conference on Disarmament on Thursday, 30 July 1998.' http://www.acronym.org.uk/old/archive/spplen.htm.

The Economic Times. 'Uri Attack Could Be "Reaction" to Situation in Kashmir: Nawaz Sharif.' July 14, 2018, https://economictimes.indiatimes.com/news/defence/uri-attack-could-be-reaction-to-situation-in-kashmir-nawaz-sharif/articleshow/54494539.cms.

The Economic Times. '19 Minutes, 12 Jets, a Big Target: This Is What the IAF Did in Pakistan While You Were Asleep.' February 26, 2019, https://economictimes.indiatimes.com/news/defence/19-minutes-12-jets-3-targets-this-is-what-the-iaf-did-in-pakistan-while-you-were-asleep/articleshow/68164179.cms.

The Express Tribune. 'Pakistan Army Shoots Down 10th Indian Quadcopter This Year.' July 26, 2020, https://tribune.com.pk/story/2256797/pakistan-army-shoots-down-10th-indian-quadcopter-this-year.

The Express Tribune. 'Pakistan offers India moratorium on Nuclear Tests.' August 17, 2016, https://tribune.com.pk/story/1164259/pakistan-offers-india-moratorium-nuclear-tests.

The Guardian. 'Get Ready for Our Surprise: Pakistan Warns India It Will Respond to Airstrikes.' February 27, 2019, https://www.theguardian.com/world/2019/feb/26/pakistan-india-jets-breached-ceasefire-line-kashmir-bomb.

The Guardian. 'The Death Toll Climbs Past 150 as City Reels from Terror Attack.' November 29, 2008, https://www.theguardian.com/world/2008/nov/29/mumbai-terror-attacks-terrorism2.

The Hindu. 'Army Chief Pushes for Tech Integration into Military Systems.' January 21, 2019, https://www.thehindu.com/news/cities/Hyderabad/army-chief-pushes-for-tech-integration-into-military-systems/article26044576.ece.

The Hindu. 'Pakistan 'Must' Dismantle Terror Networks: Obama.' 24 January 2016, https://www.thehindu.com/news/international/US-President-Barack-Obama-interview-with-PTI-at-Washington/article60540429.ece?homepage=true.

The India Express. 'Blood and Water Cannot Flow Together: PM Modi at Indus Water Treaty Meeting.' September 27, 2016, https://indianexpress.com/article/india/india-news-india/indus-water-treaty-blood-and-water-cant-flow-together-pm-modi-pakistan-uri-attack/.

The Indian Express. 'Sushma Swaraj Rules Out Talks with Pakistan, John Kerry Says No Good or Bad Terrorist.' August 31, 2016, https://indianexpress.com/article/india/india-news-india/sushma-swaraj-pakistan-terrorism-john-kerry-india-visit-3004565/.

The News. 'PAF to Celebrate Feb 27 as Operation Swift Retort.' May 2, 2019, https://tribune.com.pk/story/2286502/paf-celebrates-2nd-anniversary-of-operation-swift-retort-at-ahq.

The Newspaper's Staff Reporter. 'Rare Light Shone on Full Spectrum Deterrence Policy.' *DAWN*, December 7, 2017, https://www.dawn.com/news/1375079.

The Print. 'Indian Army Commanders Left Brigade HQ "Minutes Before" PAF Bomb Fell in the Compound 27 Feb.' May 27, 2019, https://theprint.in/defence/indian-army-commanders-left-brigade-hq-minutes-before-paf-bomb-fell-in-compound-27-feb/241324/.

The Wire. 'Imran Khan's Offer to Prosecute Pulwama Perpetrators a "Lame Excuse": India.' February 19, 2019, https://thewire.in/diplomacy/imran-khan-india-pakistan-pulwama.

The Wire. 'Kulbhushan Jadhav Makes, Second 'Confession', Files Mercy Plea Before Pakistan Army Chief.' June 22, 2017, https://thewire.in/diplomacy/kulbhushan-jadhav-files-mercy-petition-before-pakistani-army.

Thee, Marek. 'The Doctrine of Nuclear Deterrence: Impact on Contemporary International Relations.' *World Futures: The Journal of New Paradigm Research* 24, no. 1 (1988): pp. 65–85. https://doi.org/10.1080/02604027.1987.9972060.

Tufail, Kaiser. 'Changing Dynamics of Air Warfare in South Asia and Future Challenges for PAF.' In *Pulwama-Balakot Crisis & Operation Swift Retort 27 February 2020*, edited by Saima Aman Sial, pp. 5–10. CISS Special Issue (2020).

Tufail, Kaiser. 'Pulwama – From Bluster to Whimper.' *Kaiser Tufail Blogspot,* June 1, 2019, http://kaiser-aeronaut.blogspot.com/2019/06/pulwama-from-bluster-to-whimper.html.

Tweet of 'Additional Directorate General of Public Information, IHQ of MoD.' August 26, 2022, https://twitter.com/adgpi/status/1563067869436735489?ref_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E1563067869436735489%7Ctwgr%5Ee219ce8d920644797a93013ab13ef1e08eb05271%7Ctwcon%5Es1_&ref_url=https%3A%2F%2Fwww.indiatoday.in%2Findia%2Fstory%2Findian-army-inducts-swarm-drone-systems-1992907-2022-08-26.

Ud Din, Waseem Dr, Ali Javed Hashmi and Abdullah Rehman Butt. 'Development of Pakistan's Space Program.' Edited by Sarah Siddiq Aneel (Issue Paper 3). Rawalpindi: Centre for Aerospace and Security Studies, 2021.

Ullah, Sufian. 'Arms Control in Crisis: An Assessment of Contemporary Trends.' *Islamabad Policy Research Institute Journal* 20, no. 2 (2020): pp. 118–147.

Ullah, Sufian. 'Realignments and Evolving Nuclear Capabilities in the Indian Ocean: Effects on Security Environment.' *Australian Journal of Maritime and Ocean Affairs* 13, no. 4 (2021): pp. 262–272. https://doi.org/10.1080/18366503.2021.1883820.

Ullah, Sufian. 'SAV Review: The New Era of Counterforce in South Asia.' *South Asian Voices,* January 10, 2020, https://southasianvoices.org/sav-review-the-new-era-of-counterforce-in-south-asia/.

Umar, Lubna. 'Azm-e-Nau and Renewed Security Trends.' *Pakistan Observer,* April 9, 2010.

United Nations Office for Disarmament Affairs. 'Developments in the Field of Information and Telecommunications in the Context of International Security.' https://www.un.org/disarmament/ict-security/.

United Nations Security Report. 'Final Report of the Panel of Experts on Libya Established According to Security Council resolution 1973 (2011).' *S/2021/229*, March 8, 2021, para. 63.

U.S. Embassy and Consulates in Pakistan Press Release. 'Statement by Secretary Pompeo: Concern Regarding India-Pakistan Tensions.' February 27, 2019, https://pk.usembassy.gov/statement-by-secretary-pompeo-concern-regarding-india-pakistan-tensions/.

Vincent, James. 'Putin Says the Nation that Leads in AI "Will Be the Ruler of the World."' *The Verge,* September 4, 2017, https://www.theverge.com/2017/9/4/16251226/russia-ai-putin-rule-the-world.

Waltz, Kenneth. 'More May Be Better.' In *The Spread of Nuclear Weapons: A Debate Renewed*, edited by Scott Sagan and Waltz, pp. 3–45. New York, N.Y.: W. W. Norton Company, Inc, 2nd ed., 2003.

Waltz, Kenneth N. 'Nuclear Myths and Political Realities.' *American Political Science Review* 84, no. 3 (1990): pp. 730–45. https://doi.org/10.2307/1962764.

Waltz, Kenneth N. *The Spread of Nuclear Weapons: More May Be Better*. Adelphi Papers no. 171. London: International Institute for Strategic Studies, 1981.

Waltz, Kenneth N. *Theory of International Politics*. New York, N.Y.: Random House, 1979.

Wang, Yuang-Kang. 'Offensive Realism and the Rise of China.' *Issues and Studies English Edition* 40, no. 1 (2004): pp. 173–201.

Wani, Riyaz. 'Life under Siege in Kashmir.' *The Diplomat,* January 21, 2020, https://thediplomat.com/2020/01/life-under-siege-in-kashmir/.

Webel, Charles and Johan Galtung, eds. *Handbook of Peace and Conflict Studies*. London: Routledge, 2007.

Westcott, Stephen P. 'Seizing a Window of Opportunity? The Causes and Consequences of the 2020 Sino-Indian Border Stand-Off.' *Journal of Asian Security and International Affairs* 8, no. 1 (2021): pp. 7–32. https://doi.org/10.1177/2347797021992527.

Willet, Marcus 'The Cyber Dimension of the Russia–Ukraine War.' *The International Institute of Strategic Studies,* October 6, 2022, https://www.iiss.org/blogs/survival-blog/2022/10/the-cyber-dimension-of-the-russia-ukraine-war.

Williams, Heather. 'Asymmetric Arms Control and Strategic Stability: Scenarios for Limiting Hypersonic Glide Vehicles.' *Journal of Strategic Studies* 42, no. 6 (2019): pp. 789–813. https://doi.org/10.1080/01402390.2019.1627521.

Wilner, Alex S. 'Artificial Intelligence and Deterrence: Science, Theory and Practice.' *International Journal* 73, no. 2 (2018): pp. 1–14.

Wirsing, Robert. *India and Pakistan and the Kashmir Dispute: On Regional Conflicts and Its Resolutions*. New York, N.Y.: St Martin's Press, 1998.

Wirsing, Robert G. *Kashmir in the Shadow of War: Regional Rivalries in the Nuclear Age*. New York, N.Y.: M.E. Sharpe, 2003.

Wohlstetter, Albert. 'The Delicate Balance of Terror.' *Foreign Affairs Journal* 37, no. 2 (1959): pp. 211–234. https://doi.org/10.2307/20029345.

Wong, Yuna Huh et al. *Deterrence in the Age of Thinking Machines*. Santa Monica, C.A.: RAND Corporation, 2020.

Woolf, Amy F. 'Conventional Prompt Global Strike and Long-Range Ballistic Missiles: Background and Issues.' *Congressional Research Service*, January 8, 2019, https://apps.dtic.mil/sti/pdfs/AD1066007.pdf.

Yoo, John. 'Embracing the Machines: Rationalist War and New Weapon Technologies.' *California Legal Review* 105, no. 2 (2017): pp. 443–500.

Yousaf, Kamran. 'Pakistan Denounces Modi's Nuclear Threat as "Highly Unfortunate and Irresponsible".' *The Express Tribune,* April 22, 2019. https://tribune.com.pk/story/1956656/pakistan-flays-modis-irresponsible-war-rhetoric.

Yusuf, Moeed. *Brokering Peace in Nuclear Environments: US Crisis Management in South Asia*. Stanford, C.A.: Stanford University Press, 2018.

Yusuf, Moeed. 'The Pulwama Crisis: Flirting with War in a Nuclear Environment.' *Arms Control Association,* May, 2019, https://www.armscontrol.org/act/2019-05/features/pulwama-crisis-flirting-war-nuclear-environment.

Zeb, Rizwan (DS (Research) Air War College Institute). Email Interview by one of the Authors, Karachi, 2022.

Zehra, Nasim. *From Kargil to the Coup: Events That Shook Pakistan*. Lahore: Sang-e, Meel Publisher, 2018.

Zulfikar, Fahad. 'Pak Army Shoots Down Indian Spy Drone at LoC: ISPR.' *Business Recorder,* January 3, 2021, https://www.brecorder.com/news/40046856/pak-army-shoots-down-indian-spy-drone-at-loc-ispr.

Zulfiqar, Saman. 'Kashmir: Nature and Dimensions of the Conflict.' *Journal of Current Affairs* 1, nos. 1 & 2 (2016): pp. 51–65.

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